

# THE IRON AGE

A Review of the Hardware, Iron, Machinery and Metal Trades.

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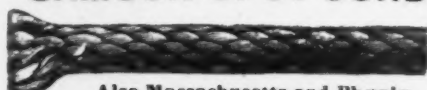
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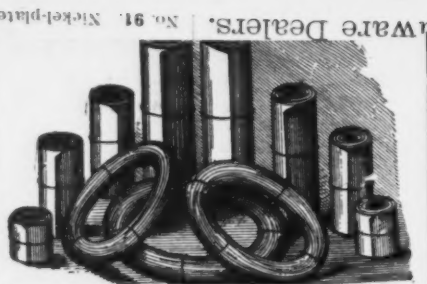
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Socket Double Brace Hangers, with chain oil-  
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88 30-in. drop, 2 15-16 in. shaft, list.....\$25.50  
18 20 in. " 2 15-16 in. " ".....21.20  
10 18-in. " 2 15-16 in. " ".....20.15  
2 30-in. " 2 7-16 in. " ".....18.60

No. 2—Same as above only single brace.

54 20-in. drop, 2 15-16 in. shaft, list.....20.40  
6 14-in. " 2 3-16 in. " ".....11.40  
1 12-in. " 2 3-16 in. " ".....10.90

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114 20-in. drop, 2 15-16 in. shaft, list.....\$30.40

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30 30-in. drop, 2 15-16 in. shaft, list.....31.55

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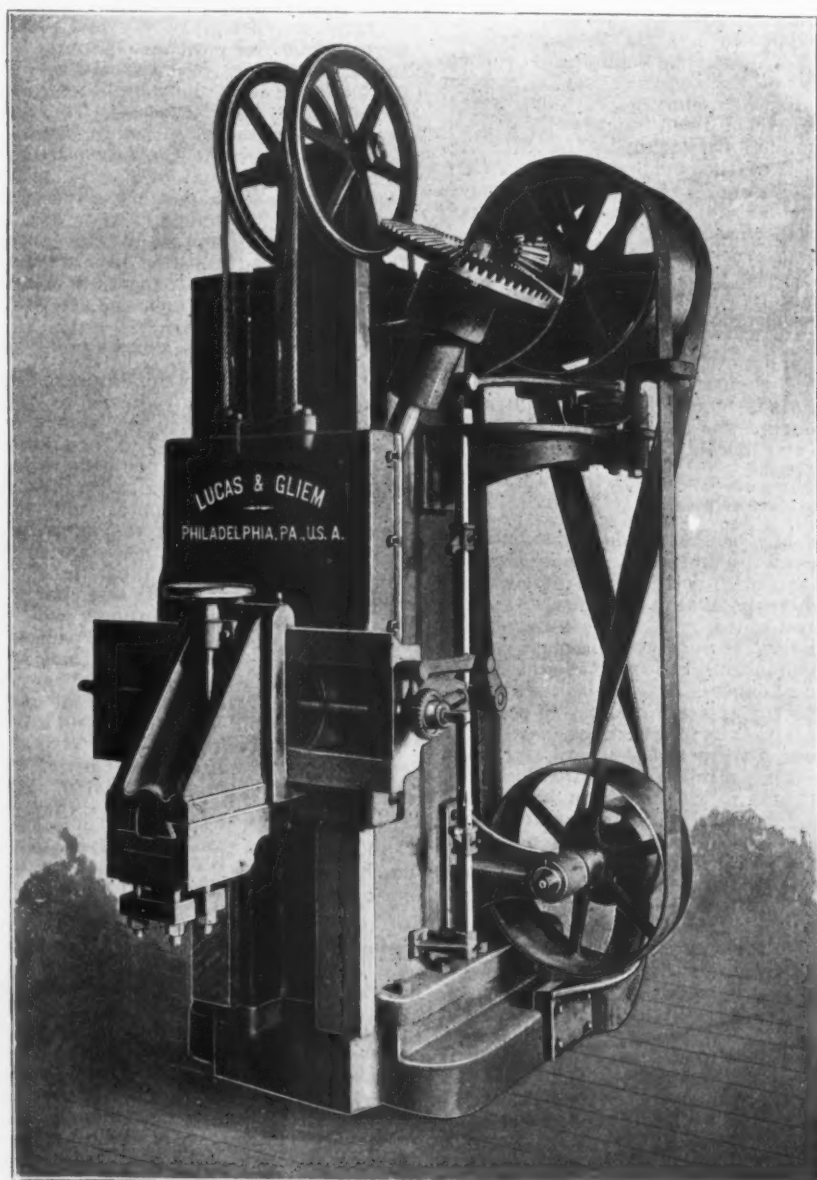
# THE IRON AGE.

THURSDAY, DECEMBER 7, 1899.

## Portable Electrically Driven Butt Slotting Machine.

The accompanying engraving represents an electrically driven butt slotting machine which possesses some new features. The shifting arrangement on the belts will be seen to be of the same general design as that used on planers designed by the same builders, the Lucas & Gliem

for finishing the pads inside the dynamo frames and rings where the fields are bolted on. The machine has a stroke of 40 inches and is driven by a phosphor bronze spiral pinion and a steel rack. The head has a cross feed on the slide of 28 inches and the tool block has an in and out adjustment of 4 inches. It is also provided with a relief tool apron. It is intended to be used on a large floor plate provided with necessary tee slots for clamping the work.



PORTABLE ELECTRICALLY DRIVEN BUTT SLOTTING MACHINE.

Machine Works of Philadelphia. The shaft for operating the shifting mechanism is run through the solid frame or upright near the top and makes a very substantial arrangement, doing away with unnecessary brackets, which are liable to spring. The illustration does not show the motor with which the machine is driven, but provision is made for fastening it to the main upright at the bottom and gearing it direct to the lower pulley shaft, which, in other words, is the countershaft of the machine. The machine is intended for large electric manufacturers

The machine is then set inside the ring, clamped in position and is ready for operation.

A dispatch from Duluth, Minn., says that the demand for iron ore is so great that the Minnesota Iron Company will try the experiment of extending the navigation season one or two months, running their steamers without insurance. The open lakes do not freeze, as a rule, until February, and the narrow channels will be kept open.

## The Federal Bankruptcy Law.

### Its Operation During Its First Year.

WASHINGTON, D. C., December 5, 1899.—The Attorney-General will transmit to Congress in a few days the annual report of the Department of Justice on the operation of the new Federal Bankruptcy law for the period ending November 1, 1899, being the first full year since its enactment. The report has been compiled by E. C. Brandenburg, in charge of bankruptcy matters, and through the courtesy of the Attorney-General the correspondent of *The Iron Age* is enabled to present the following full abstract:

"The operation of the present law during the past year has demonstrated that it lacks many of the inherent defects of the previous laws, but has others which need legislative action for its perfection to satisfy the demands of the commercial world. It may be safely said that the interests of the debtor class have been carefully guarded by the framers of the present law, but in so doing its practical operation has demonstrated that certain opportunities for fraud exist, which Congress clearly never intended but could hardly foresee.

"To the end that compliance might be had with sections 53 and 54 of the law blanks for semi-annual reports were sent to the clerks of the courts of bankruptcy for their own use and also for the use of the various referees in their respective districts. Such reports have been received from every judicial district in the United States excepting from the clerks of the courts in Southern California and Western Louisiana, and while more or less defective owing to the lack of keeping records much valuable information is disclosed.

"As reports have been received from nearly 100 clerks and 700 referees it may be readily understood that the amount of labor incident to their tabulation and revision has been something enormous, especially when it is remembered that they cover 22,000 voluntary and involuntary cases. The amount of business under this law may be best appreciated when it is remembered that the total number of civil suits in which the United States was not a party, brought during the past year in the Circuit and District Courts, is considerably less than one-half the number of bankruptcy cases.

### Voluntary Cases.

"Advantage of the law has been taken by men of all classes and in all walks of life and in every section of the country. As might be expected, petitions are more numerous in the localities where population is densest, though there are exceptions even to this rule, as the number filed in Delaware and Eastern Pennsylvania seems out of proportion to the population, but may doubtless be attributed to certain local causes.

"The States showing the greatest number of petitions filed during the year are—viz.: New York, with 1512 petitions in the northern, 1394 in the southern and 336 in the eastern district, making a total of 3242 for the State; Illinois, with 1918 petitions in the northern district and 278 in the southern, making a total of 2196; Massachusetts, with 1637 petitions; Alabama, with 1153 in the northern, 380 in the middle and 36 in the southern district, making a total for the State of 1569; Minnesota, 880; Ohio, 437 in the northern district and 431 in the southern, making a total for the State of 868; Pennsylvania has a total of 732 for the State, which is comparatively small for its population. The smallest number of voluntary petitions were filed in the following States: Nevada, 3; Delaware, 5; Arizona, 6; Wyoming, 7; Idaho, 85, and South Dakota, 52.

"The grand total of petitions filed in the United States for the period ending September 30, 1899, is 20,994, exclusive of those for the southern district of California and the western district of Louisiana, of which no reports have been received.

"From the reports of the clerks of courts it appears that of the voluntary petitions 19,559 were adjudicated bankrupts and in only 175 cases were adjudications refused and the petitions dismissed. Discharges were granted in 10,883 cases and were refused in 32; 163 compositions were confirmed.

**Liabilities and Assets.**—"The liabilities in 19,582 voluntary cases reported by the referees are \$355,949,336 48, while the total amount of assets scheduled in these cases is \$37,863,090 90, which is a little more than 10 per cent. of the liabilities, and the total amount of dividends declared is \$1,338,660.30. This amount of dividends will be largely increased, as many of the cases here included have not been closed and final dividends declared, and for this reason it is impossible to state with any degree of accuracy the percentage that the dividends bear to the total liabilities.

"The summary also discloses the fact that of the petitions filed in 335 cases the liabilities were less than \$100, 1562 cases between \$100 and \$500, 1583 between \$500 and \$1000, 6886 between \$1000 and \$5000, 3004 between \$5000

and \$10,000, 2179 between \$10,000 and \$20,000 and in 2902 cases over \$20,000.

"The report also shows that in 9506 cases there were assets and in 10,010 there were no assets.

"The nature of the business in which the bankrupts were engaged, as disclosed by the summary of the referees' reports, shows that 1915 were farmers, 5288 wage earners, 5345 merchants, 430 manufacturers, 572 professional men and 5368 contractors, hotel keepers and others of a miscellaneous character.

### Involuntary Petitions.

"The involuntary feature of the law authorized the filing of petitions commencing with November 1, 1898, so that this report, so far as this class of cases is concerned, is for the 11 months ending September 30, 1899. During this period the clerks' reports show that 1452 petitions were filed. This discrepancy between the number of voluntary and involuntary petitions may be readily attributed to the present era of business prosperity, hardly equaled in the history of our country. The involuntary petition is more the concomitant of times of financial depression and it will then doubtless be the popular method for settling monetary obligations. Of the cases of involuntary bankruptcy 882 were adjudicated bankrupts, while the petitions in but 82 were dismissed. In this class of cases 52 compositions were entered into by the bankrupts and their creditors, which were confirmed.

**Liabilities and Assets.**—"The liabilities involved in the 898 involuntary cases reported by the referees is \$23,207,181.77, while the schedules in 593 cases disclose assets to the amount of \$11,701,713.43; in 212 there were absolutely no assets and in a number they were classed as unknown or nominal.

**Nature of Business.**—"The petitions further show that of those adjudicated involuntary bankrupts one was a farmer, 29 wage earners, 249 merchants, 76 manufacturers, 7 professional men and 200 were of a miscellaneous nature.

### Rules, Forms and Orders.

"Early in January the Supreme Court issued the rules, forms and orders as required by section 30 of the act. Prior to their issuance the courts of bankruptcy were more or less handicapped in the method of procedure, and in about eight of the districts they declined to proceed with the references and adjudication of the petitions pending the promulgation of such rules. Notwithstanding the care with which they were prepared most of the courts have deemed it necessary to supplement them by others looking more to the detailed execution of the law and to the question of fees and charges.

"An unsuccessful attempt was made to secure the adoption of a form for the title page of the record required by section 40 to accompany each issue. At present no uniform page is required. For the sake of convenience, uniformity and the saving of time and expense a uniform title page should be required and a form promulgated by the Supreme Court, in which should be included such a *résumé* of the contents of the record as would readily enable the furnishing of needful data for preparing reports required for the advice of Congress and others.

### Fees and Expenses.

"In order to the institution of a proceeding in bankruptcy the petitioner is required to deposit with the clerk of court \$25, of which \$10 is for the clerk, \$10 for the referee and \$5 for the trustee. Pursuant to this requirement these fees were paid in the case of 16,864 voluntary petitions before the petitions were filed and in 573 cases such fees were paid subsequent thereto. In 2820 cases the petitions were filed without paying the filing fee or *in forma pauperis* pursuant to that provision in the act which permits the filing of the petition of a proposed voluntary bankrupt where it is accompanied by an affidavit stating that the petitioner is without and cannot obtain the money with which to pay such fees. Of the number filed without the payment of fees 1123 were petitions instituted in the district of Alabama and the balance were about equally distributed throughout the United States.

"While an effort has been made to comply with the act calling for a statement of the expenses incident to the prosecution of petitions in bankruptcy the result has been far from satisfactory, owing to the dual relation borne by the clerks of court and referees to these fees. The clerk collects the filing fees, but has no notice of the charges of the referee or trustee until the record is complete; the referee has knowledge of certain expenses before him, but none as to what may have been taxed by the clerk. Then, again, a case may have been commenced in one year and closed in another, so that without very great labor, owing to the magnitude of this bankruptcy business, it is all but impossible to get even an accurate approximation. Furthermore, these expenses vary in the different judicial districts, as some courts, realizing the insufficiency and disproportion of the fees allowed by the act to the amount of labor required of the referee, are



more lenient than others and allow certain minor charges for clerk hire, office rent, receiving and filing of proofs of claims, notices, &c., while in others the act is strictly construed and nothing is allowed beyond that which is specifically authorized by the law. It may be safely said, however, that as a rule the charges for proceedings in bankruptcy under this law are reduced almost to a minimum.

#### Suggestions as to Operation of Law.

"While the propriety of suggesting amendments to the Federal Bankruptcy law by this Department may be questionable it is perhaps not inappropriate to place before Congress such observations as may have been presented to our attention through contact with those having to do with its execution and that may have been gained from a careful study of its provisions, for such action and consideration that may be deemed expedient. As a rule the present law carefully guards the interests of the debtor class, while the same can hardly be said to be true of the creditors. As was well said by the American Bar Association at its recent meeting, 'whatever amendments are made to the provisions of the law relating to voluntary bankruptcy should be in the line of a better protection to the creditors against fraud in the bankruptcy proceedings.'

"Section 4 provides that any person who owes debts, except a corporation, may become a voluntary bankrupt. Corporations are thus specifically excepted from those entitled to the advantages of this feature of the law. If, under the present conditions, a corporation desires to go into liquidation and have its business closed through the instrumentality of the Federal authorities, it must, by a process of evasion, first commit an act of bankruptcy and then have proceedings instituted against itself for the purpose of being adjudicated an involuntary bankrupt. It seems no more than proper that corporations should be entitled to the same privilege as an individual with respect to the voluntary feature of the law.

"Under section 6 bankrupts are entitled to the exemptions 'prescribed by the State laws in force at the time of filing the petition in the State wherein they have had their domicile for the six months or the greater portion thereof immediately preceding the filing of the petition.'

"Upon objection to a similar provision in the act of 1867, on the ground that it lacked uniformity and therefore was unconstitutional, the courts held that the word 'uniform' as there used referred only to uniformity in administration. A serious question nevertheless arises as to whether the exemption should not be literally uniform in every State. As the law stands the exemption in one State may be limited to a homestead of a few hundred dollars in value and in another it may be worth several thousand, so that literally speaking there is no uniformity.

"While a serious question may arise as to the constitutionality of a provision placing a different limit on the exemptions from that fixed by the States, the attention of Congress is nevertheless called to this matter in order that a final determination may be reached as to whether a uniform maximum limit should not be set upon the amount of this exemption in the various States.

"There is perhaps no section of the law upon which there is greater unanimity of opinion as regards its amendments than section 14, relating to the discharge of a bankrupt. Under the act of 1867 the assets of the debtor had to bear a certain ratio to his debts in order that a discharge might be obtained. While in some cases this provision might prove efficacious as an aid in preventing fraud it is a hard rule and largely interferes with the true idea of a bankruptcy law. In our judgment at the present time the law should not be amended in this respect, though considerations of the subject with this object in view might be quite proper at some later date, after ample opportunity has been afforded the misfortunate of some years past to receive a discharge co-extensive with the limits of the United States.

"However, whenever a person has demonstrated his inefficiency as a business man and as a result has once taken advantage of the bankruptcy law he ceases to be worthy of the same consideration as one who has not and should not be treated as leniently by the law. It is suggested, therefore, that in the case of a person seeking to take advantage of the law a second, third or fourth time, before granting him a discharge he should be compelled to pay a certain portion of his debts, say one-third or one-half in the case of the second application, and with an additional amount in the case of a third or fourth. This would largely remove the incentive on the part of dishonest men to repeatedly and intentionally become bankrupt.

"Section 14b of the present law provides that a discharge shall be refused where the bankrupt 'with fraudulent intent to conceal his true financial condition and in contemplation of bankruptcy destroys, conceals or fails to keep books of account or records from which his true condition might be ascertained.' It has been held that the burden of proof in this case is upon the creditors to show

this intent, which is frequently all but impossible. The bankrupt is the one benefited by the discharge and logically it would seem that the onus of showing this failure to keep proper books of account was not with the intent to conceal his true financial condition should be placed upon him.

"The law specifies certain debts which are not released by a discharge in bankruptcy, but no mention is made of the case where additional credit is obtained through the bankrupt's misrepresentation of the condition of his assets. It would seem that in cases of this character the bankrupt should not only be refused a discharge but a severe penalty provided for the offense. A creditor must rely more or less upon the debtor's integrity when giving credit, and if through the practice of deception new or additional credit is given such debts should certainly not be discharged, notwithstanding the fact that judgment has not previously been had upon such debts.

"Another provision which should be carefully considered is where the bankrupt has conveyed property for the purpose of giving a preference, with the intent to hinder, delay or defraud his creditors. In this case it seems that the act itself should operate as a bar to the bankrupt's discharge and possibly be made an offense. The simple fact of the right to recover property illegally transferred by a bankrupt if discovered is no deterrent to the commission of such act, and therefore it would seem that the best preventive would be to make the act an offense and punishable accordingly. Furthermore, the limit of four months within which a conveyance creating a preference may be set aside, when it is shown that it is lacking in good faith, is insufficient.

"Where a man obtains credit, sells stock thus obtained as cost or below to get its equivalent in money into his hands and then squanders it for his own pleasure without any intention of repaying the same, he is certainly unworthy of consideration and it would seem the court might in all propriety be authorized to deny a discharge.

"There is no doubt whatever that the fees allowed under the present law are in many respects inadequate for the services needed. While under the act of 1867 the exorbitancy of the fees and expenses formed a potent factor in its repeal, the present law has gone to the other extreme and reduced the charges to a minimum, and to such an extent as to make them hardly adequate to secure or retain such class of officers as are required to properly execute the law and protect the interests of all concerned. The services required of referees and trustees are extremely exacting, and in many instances unusual qualifications are necessary to the proper conduct of a proceeding in bankruptcy and the protection of an estate. While it is perhaps not proper to state wherein the limit should be placed the matter should receive the thoughtful attention of Congress.

"Other amendments might very properly be suggested, but the foregoing seem to be the most important, and while it is perhaps not incumbent upon this Department to make any recommendations in this matter we have ventured to present the foregoing merely as suggestions, for such consideration as they may warrant.

"As might naturally be expected the innovation in the method of procedure with reference to insolvency has met with criticism, favorable and otherwise. The number of applicants for relief under the voluntary feature of the law and the great contrast between the magnitude of the liabilities as compared with the assets has caused unfavorable criticism on the part of some, but a thoughtful consideration of the conditions demonstrates the fact that the vast sums being released through the discharge merely means the balancing of accounts long since worthless and which never would be of value, with the resultant good that those oppressed with the weight of misfortune may again start life anew and be given an opportunity to redeem themselves. The releasing of nearly 20,000 individuals from their past obligations within the year, many of marked ability in the business world, who perhaps through some misfortune beyond their control have been reduced to penury, can have but one result and that for the good.

"That some idea might be furnished Congress upon the question as to the time when these obligations were incurred which caused insolvency an effort was made by this Department to obtain this information from the referees, but it has proved only partially successful. Sufficient data has been obtained, however, to show that a large percentage of those who are receiving discharges became insolvent during the period of business depression which swept over this country several years since and some for periods even anterior.

"As opposed to the criticism of the law stands the declaration of the American Bar Association at its meeting in Buffalo during the past summer. The Committee on Commercial Law of that association made the following report:

"'a. That a bankrupt law is wise and beneficent legislation; b. That the general features of the present bankrupt law should have the approval and support of the bar



and commercial community; c. That whatever amendments are made to the provisions of the law relating to voluntary bankruptcy should be in the line of a better

"In line with the foregoing the declaration of the Commercial Law League of America at its convention at Asbury Park during the past summer, when it placed

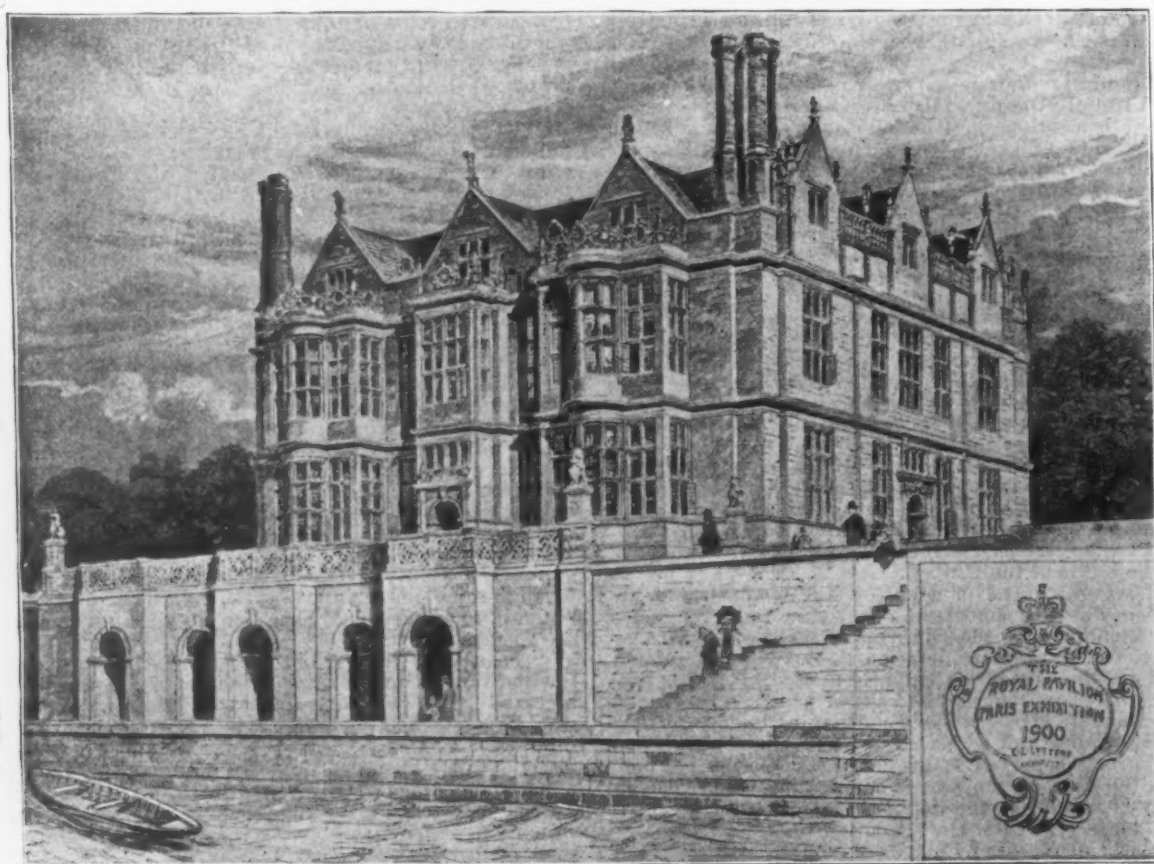


*The Pavilion of Asiatic Russia and Siberia.*

protection to the creditor against fraud in the bankruptcy proceedings; d. That the amendments to the provisions of the law relating to involuntary bankruptcy should be

itself on record as favoring a 'national bankruptcy law and approves of the general features of the act of 1898.'

"This and like favorable comment at other conven-



*The Pavilion of Great Britain.*

along the lines of a better remedy for the creditor for fraud, actual or contemplated, on the part of the debtor previous to the institution of bankruptcy proceedings.'

tions presents the view generally taken with reference to the question of the existence of a permanent Federal bankruptcy law."

W. L. C. —

## The Palaces of Foreign Nations at the Paris Exposition.

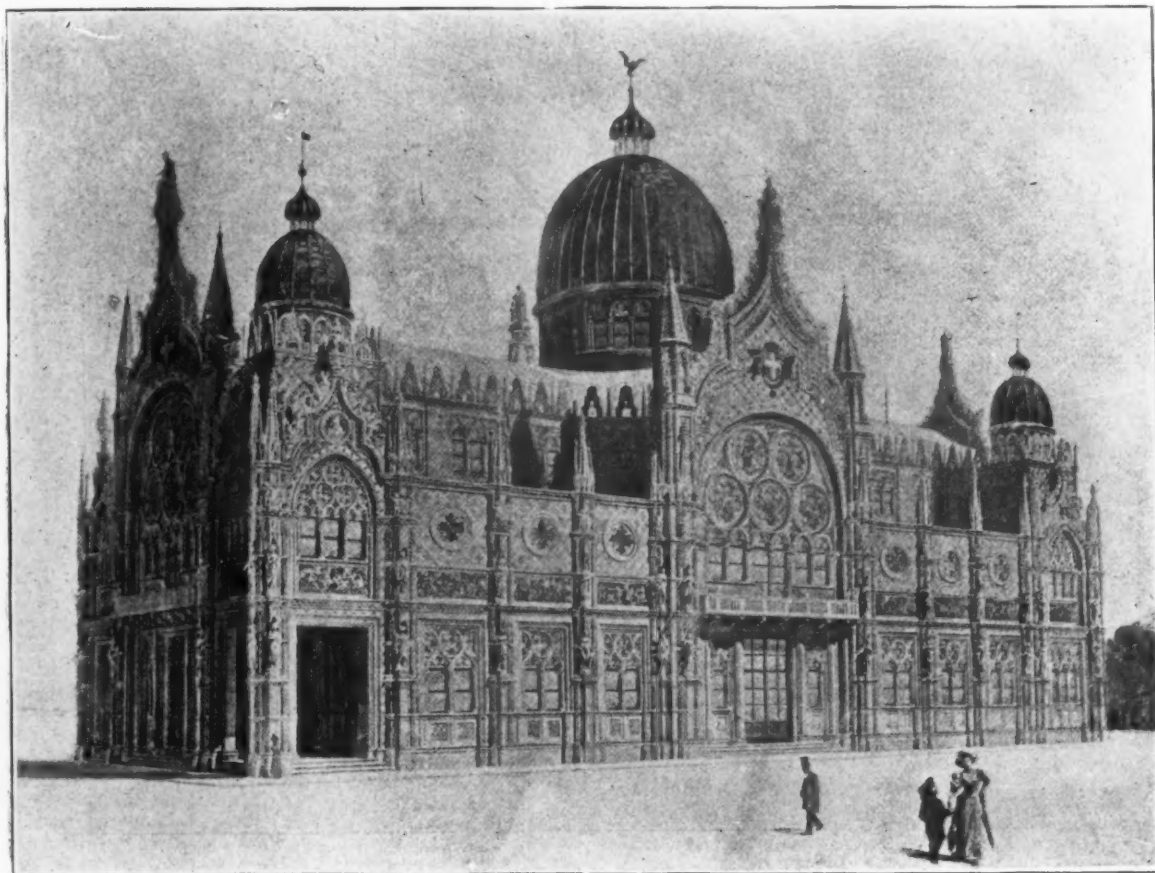
Along the Seine, between the Invalides and Alma bridges, there is to be a series of structures at the Paris Exposition next year exhibiting the characteristic features of the architecture of the different countries represented. While individually many of these buildings will possess the features of considerable interest, and a number of them are likely to prove very attractive, it is difficult to escape the conclusion that the series will as a whole present a somewhat curious jumble. The *Paris Figaro Illustré* in a recent issue shows pictures of nearly all the buildings, from which we select a number.

**Russia.**—Beginning first with Russia there is presented a pavilion for Asiatic Russia and Siberia, the architect being Robert Meltzer. To the left of the principal entrance is a reception hall for the Czar, a feature of all public structures of this kind. Facing the principal entrance is a large court richly decorated, which is to serve as a restaurant. The facade of the entrance, which gives access to the hall set aside for Central Asia, is richly decorated with brick and majolica in a style copied from the celebrated mosque at Samarkand. To the right of the main court is the hall in which there will be exhibited the products of the domains of the imperial family. The Central Asia hall is to contain exhibits of Siberian products and a panorama painted by Karowine. Other rooms are set aside for the Noble Petroleum Company. Other halls will contain exhibits of the products of Northern Siberia, of the Ural Mountains and of the Siberian Railroad, with maps, plans, &c. There will be a similar panorama by Dr. Pisetzki reproducing on a very small scale the entire route of the Siberian road to Vladivostok. It will take three hours and a half to present the whole of this panorama. On the first floor there will be a panorama of the crowning of the Czar, painted by Gervex, and a restaurant in which national dishes will be served by Russians in costume. A special entrance under the clock tower will give access to the exhibit of the Trans-Siberian Railroad train. This will be composed of cars to be used on the expresses between Moscow and China, the idea being that persons may occupy seats in this train and through its windows observe the passage of the country traversed by the train, finally passing out by a door giving access to the Chinese station and to the Chinese section of the exposition.

**Great Britain**—The architect of the British Commission, Edwin L. Lutyens, has reproduced Kingston House, one of the finest examples of English architecture of the seventeenth century. This structure, which is to contain the finest collections of paintings, furniture, jewelry and silver ware of England, is to be built entirely of steel,



*The German Pavilion.*

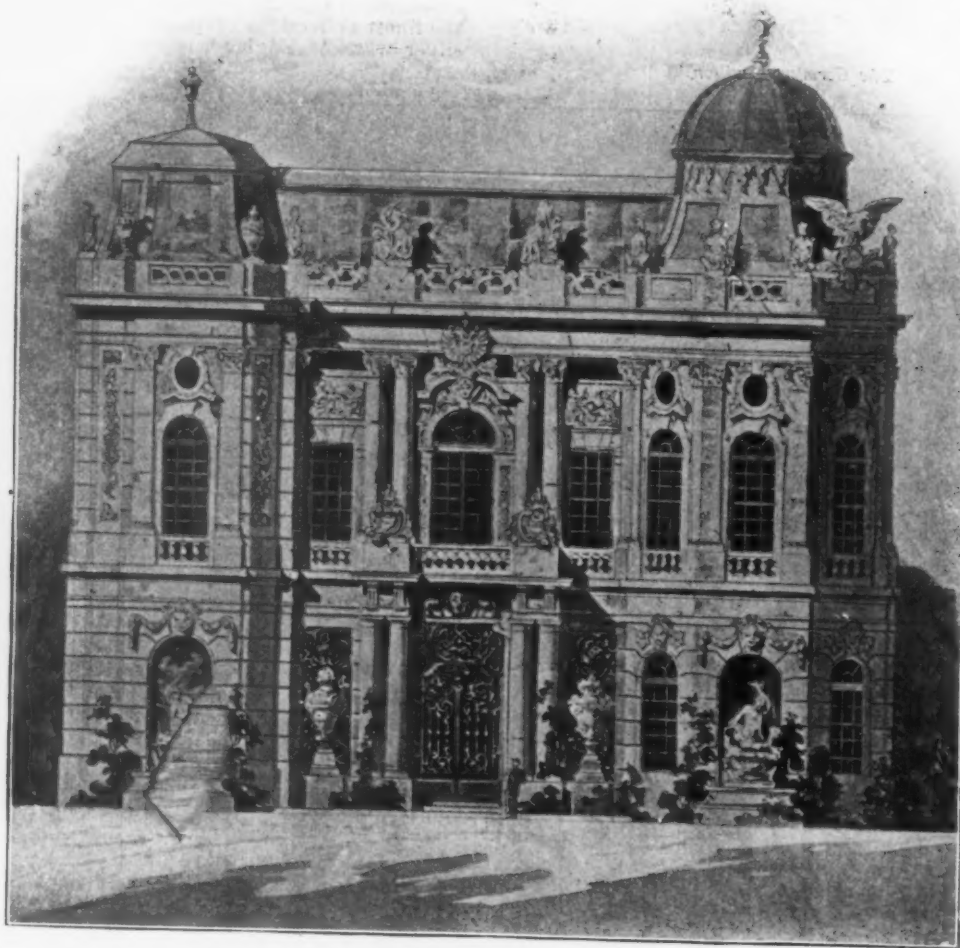


*The Pavilion of Italy.*





*The Pavilion of Hungary.*



*The Austrian Pavilion.*



the walls being covered with stamped and sheet metal. All materials without exception will be made in England.

*Germany.*—The German pavilion, designed by M. Bohnstedt, is to be covered with stained copper and gilded towers so as to produce an original effect.

*Austria.*—The Austrian pavilion shown in the accompanying engraving is from the designs of M. Baumann, an architect who has been the creator of a number of famous structures in Vienna.

*Hungary.*—The idea carried out in the pavilion of Hungary by the architects, Zoltan-Balint and Louis Jambor, was to reproduce the typical details of a series of monuments belonging to the different styles created in Hungary. This has been carried out in the following manner: Four wings are placed at the ends of a cloister of the Roman style, the portal of the Jaak being the leading feature. To the north on the side of the Seine the facade is Gothic, being taken from the castle of Vajdahunyad. The upper part is a reproduction of the tower of the church in the citadel of Koermocerbanya. Next are the portals of the Chapel St. Michael of Kassa. The interior is to be decorated in a striking manner, notably the Hall of the Hussars, which is to be the reception room of the commission.

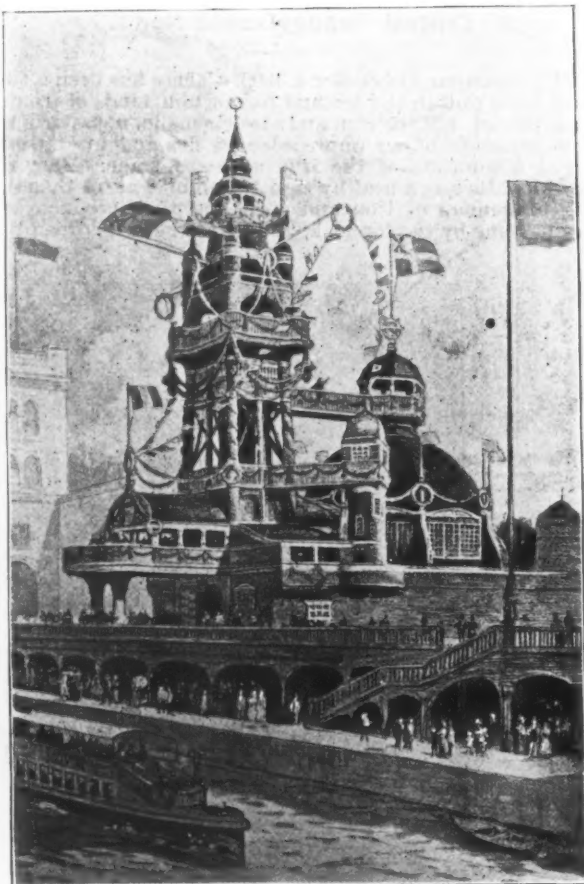
*Italy.*—Italy has been given, near the Invalides Bridge, the largest space accorded. The structure shown in the accompanying engraving was designed by Carlo Ceppi and Salvadori.

*Spain.*—Urioste y Velada has designed the Spanish pavilion shown in elevation, which is in the style of the Spanish Renaissance, the details being selected from a number of different historical and artistic monuments, among which are the facade of the Alcala University, built by Rodrigo Gil de Ontanon in 1553; the principal facade of the Alcazar of Toledo, designed by Alfonso de Covarrubias; the Salamanca University and the palace of the Counts of Monterey, now belonging to the Alba family. This pavilion will be used for the reception of the commission and is to contain an historical exposition of Spanish art.

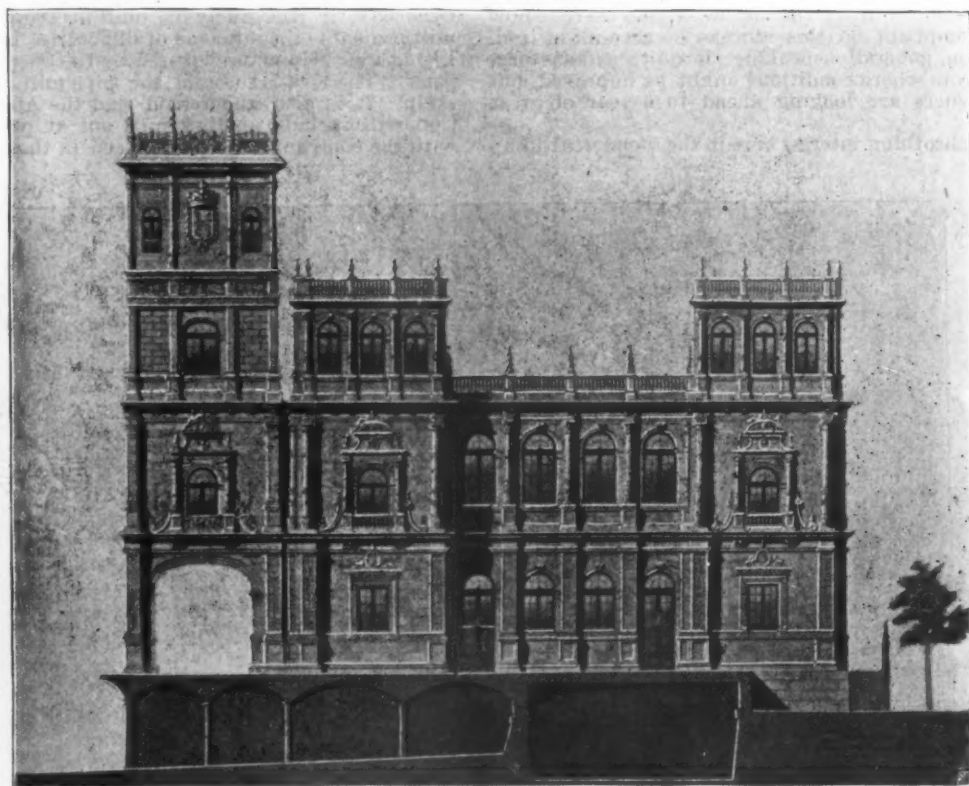
*Sweden.*—Sweden has a somewhat extraordinary structure designed by M. Boberg.

*Greece.*—The Greek pavilion is the design of the French architect, Lucien Madne.

*Bulgaria.*—The architect, M. Saladin, has given the



*The Swedish Pavilion.*



*The Spanish Pavilion.*

main entrance of the Bulgarian pavilion a frankly Mussulman type, as shown in the accompanying engraving.

The Serbian building is near the Alma bridge, being the design of M. Baudry, who has adopted the characteristic cupola type of that country.

*Peru.*—The Peruvian pavilion is the design of the French architect, M. Gaillard.

The building to be built for the United States has been illustrated in *The Iron Age*. The publishers of the *Figaro*

have selected it for the cover of their special issue, printing it handsomely in colors. The architects are Cooledge and Morin-Goustiaux.

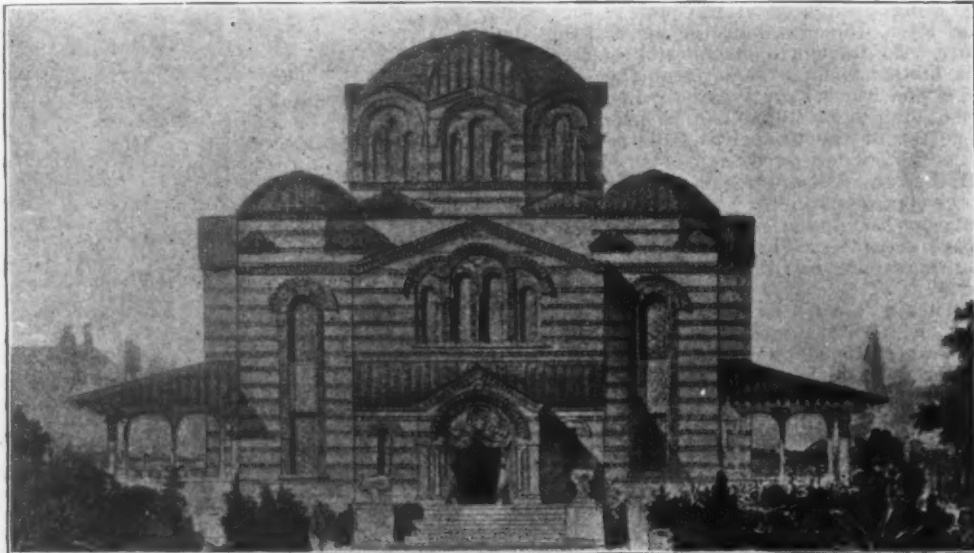
The total gold production of the Cripple Creek district of Colorado in November was \$2,515,500, an increase of more than 25 per cent. over the largest previous monthly record.

### Central Pennsylvania News.

HARRISBURG, December 4, 1899. —There has been a further falling off in the demand for certain kinds of iron in this district, but the iron and steel men do not attribute this cessation of an unprecedented demand to any material diminution of the iron and steel trade. They regard it rather as a healthy sign, as an indication that the big consumers of iron and steel and their products are taking time by the forelock, and before entering upon the

its departments, so that the company are now able to make the most of present conditions and prices.

The Atlantic Iron & Steel Company, who have been formed for the purpose of taking over the Susquehanna, New Haven & Danville Bessemer Companies, will probably include a pipe mill in their combination. Negotiations are now pending for a large tract of land adjoining the old Columbia rolling mill, which is owned by the Susquehanna Company, upon which the proposed pipe mill will be erected. The Chestnut Hill Iron Company are the owners of the land, and demand \$32,000 for it.

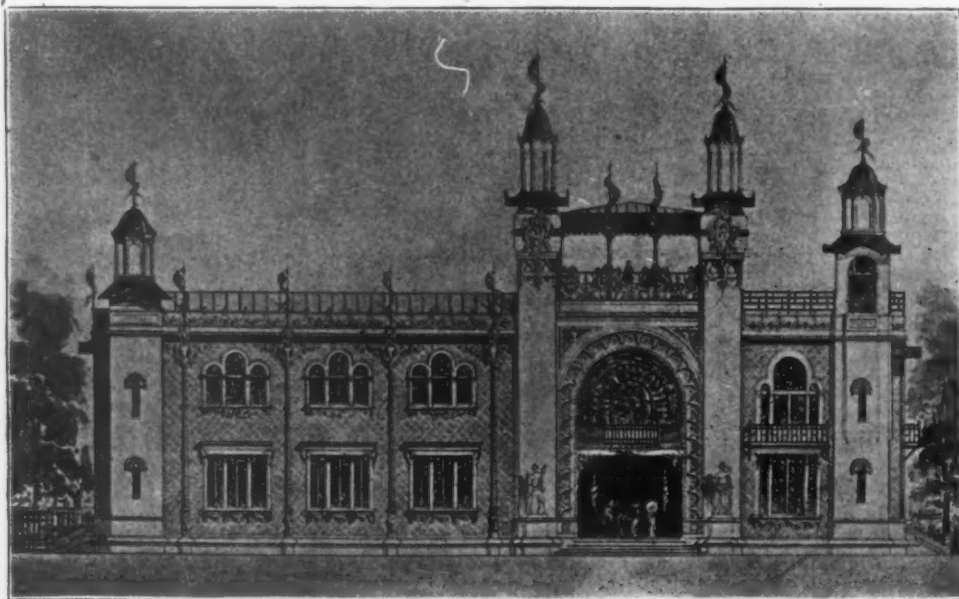


*The Pavilion of Greece.*

business of the new year are looking over the field to discover, if possible, any evidence of a break in the prices or the upward tendency. The shortage of coal has been largely overcome during the last week, and there is now very little complaint on this score or on account of iron. The situation, generally speaking, is quite satisfactory. There are spots where conditions might be improved, but the mill owners are looking ahead to a year of great activity.

There is absorbing interest here in the wonderful jump

This is considered a high figure, but if the people of Columbia will contribute \$10,000 toward the purchase of the site the pipe mill will be erected without delay. Otherwise it will likely be built at Danville. The pipe mill project is the outcome of difficulties incident to marketing the skelp manufactured by the Susquehanna Company. The idea is to build the pipe mill to consume this skelp. It is also understood that the Atlantic combination will include another mill not at present identified with the companies to be embraced in the combination.

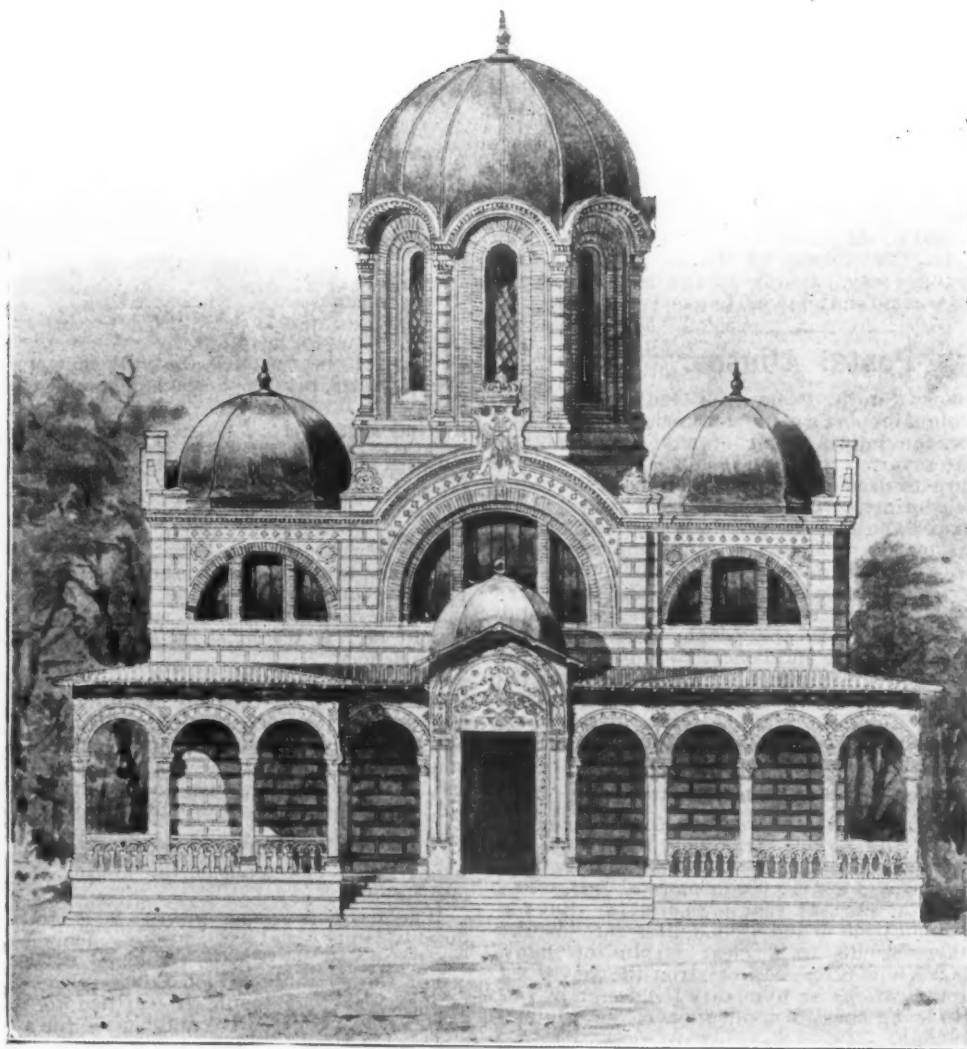


*The Pavilion of Bulgaria.*

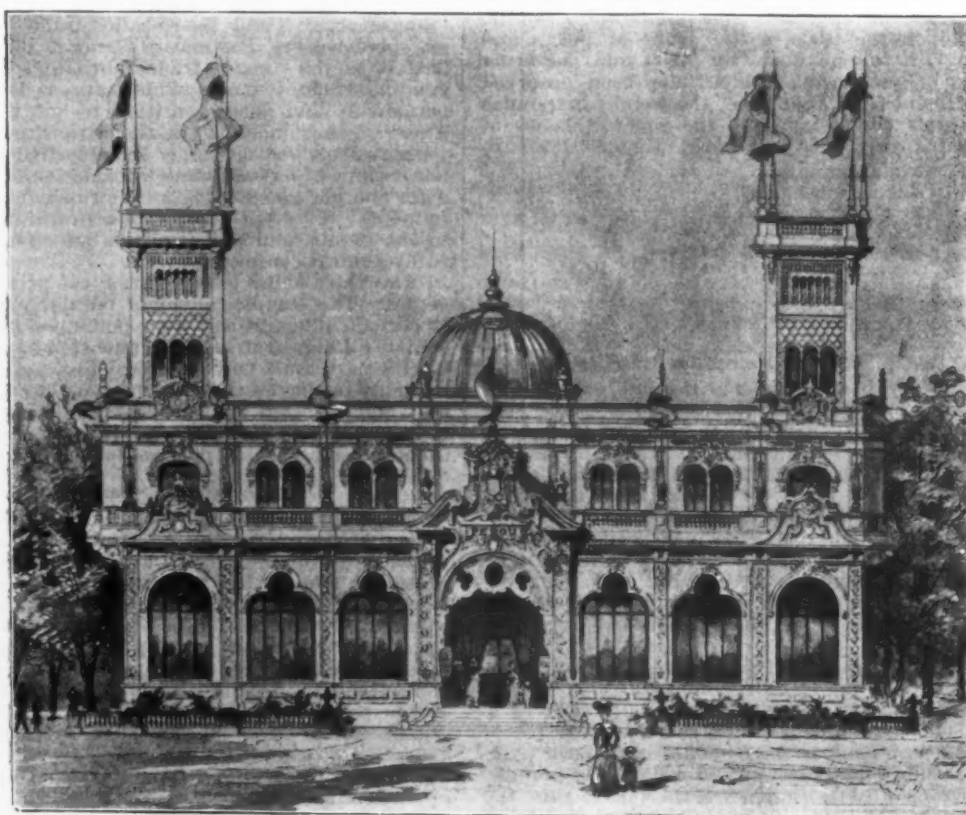
in the price of the stock of the Pennsylvania Steel Company. It has been known for some time that a tremendous business was being done by the company, but there was not on the surface any reason for the steady upward movement of the stock. A year ago it might have been bought for \$9 a share. Last week it sold for \$90. All sorts of rumors are afloat about a proposed consolidation with the Cambria and other large steel companies but those who can speak are silent. The great plant at Steelton has been maintained in the most modern way in all

The Harrisburg Pipe Bending Company are preparing for an important enlargement of their plant. They have just purchased several acres of the property of the Harrisburg Car Mfg. Company, and additional buildings will be erected to accommodate a largely increasing trade.

The Harrisburg Boiler & Mfg. Company are crowded with orders, and their product is being shipped to all parts of the United States. For a while the company were seriously handicapped for want of fuel, but are now in good shape. This company were particularly fortunate



*The Pavilion of Serbia.*



*The Pavilion of Peru.*



in having a large stock of low priced iron on hand when the jump in prices began, so that there are large profits in the present operation of the plant.

The Bessemer blooming and rail mills of the Pennsylvania Steel Company were off this week until Tuesday on account of the failure of the fuel supply. All the other departments started Monday. The Bessemer mill made a very heavy output after Tuesday. The bridge and construction departments are crowded with orders. The car famine still embarrasses the various departments in their shipments, the Pennsylvania Railroad Company not being able this week to supply cars for shipping their rails, which are stacked in the yards. About four months will be necessary for the erection of the new machine shop which is now under way. Owing to the heavy pressure of orders there was no shut down Thanksgiving Day. S.

### Postal Abuses.

Charles Emory Smith, Postmaster-General, has presented in his annual report a clear statement of the abuses which hamper the improvement of the work in other directions. He says:

The most urgent need of the postal service is the rectification of the enormous wrongs which have grown up in the perversion and abuse of the privilege accorded by law to second-class matter. There are many improvements and advances awaiting development and application; opportunities for speedier transmission and delivery fields for broadening the scope of the mail service and bringing it closer home to the people, possibilities of reduced postage, but above and beneath and beyond all of those measures of progress which experience and intelligence are working out is the redemption of the special concession which Congress granted for a distinct and justifiable public object from the fungus growths and the flagrant evils that have fastened upon it.

#### The Cost of Second-Class Matter.

For this costly abuse which drags on the Department and weighs down the service, trammels its power and means of effective advancement in very direction involves a sheer wanton waste of \$20,000,000 or more a year. The postal deficit for the current year is \$6,610,776. But for this wrongful application of the second-class rate instead of a deficit there would be a clear surplus of many millions. It is not now proposed to restrict the privileges of legitimate publications or to modify the design of the law, but only to bring back its application to its original and just scope.

The aim is not to change what Congress meant to establish, but only to lop off the excrescences which have grown upon it. These alien and illegitimate additions have come to equal, if not to exceed, the proportions of the intended and rightful recipients of the privilege.

As strikingly illustrating the extent and effect of the abuses to which reference is made, attention is particularly invited to the appended statements and exhibits. Calculating upon the basis of the count of pieces and the weighing of volume made in 1890 and adhering to the rule of estimating which has been observed in the Department from that time, the weight in pounds and the receipts for postage on the several classes of matter mailed during the year ended June 30, 1899, are as follows:

Class.	Weight. Pounds.	Postage paid.
First.....	128,517,992	\$65,967,732.96
Second—		
Paid at pound rate.....	352,703,226	3,527,032.26
Free.....	62,241,700	
Transient.....	25,289,355	1,564,290.00
Third.....	68,227,169	10,093,882.50
Fourth.....	21,776,847	3,421,181.80
Foreign.....	5,581,079	2,546,800.44
Totals .....	664,236,868	\$87,140,919.96

Careful inquiry has been made through experienced postmasters and by an examination of the records of the department, and it is believed that fully one half of all the matter mailed as second class and paid for at the pound rate is not properly second class within the intent of the law and ought justly to be paid for at the third-class rate. This gives the enormous quantity of 176,351,613 pounds from which the Department derives only a fraction of the revenue to which it is fairly entitled. The third-class rate of postage is 1 cent for each 2 ounces or fraction thereof, nominally 8 cents a pound, but in reality, through the operation of the fractional provision, the rate is higher.

A division of the amount of postage received for third-class matter by the number of pounds of such matter mailed shows that the Department actually derives a revenue of 14.75 cents a pound from this class. If therefore there had been paid, as there should have been paid, the average third-class rate on the 176,351,613 pounds, which was wrongfully transmitted at the pound rate, the Department would have received \$26,011,862.92, instead of \$1,763,516.13, which it actually received, and the postal revenues would have been increased by the handsome sum of \$24,248,346.79.

The actual financial exhibit of the Department for the last fiscal year is as follows:

Total expenditures.....	\$101,632,160.92
Total receipts from all sources.....	95,021,384.17
Deficit.....	\$6,610,776.75

#### A Possible Surplus.

Had this 176,351,613 pounds of mail matter, really of the third class but transmitted at the pound rate, paid, as it should have paid, the average third-class rate, the financial exhibit would have been this:

Receipts, as above given.....	\$95,021,384.17
Additional revenue from 176,351,613 pounds third-class matter at 14.75 .....	24,248,346.79
Total receipts .....	\$119,269,730.96
Total expenditures.....	101,632,160.92
Surplus.....	\$17,637,570.04

Or, if it be assumed that the matter would pay only the nominal rate of 8 cents a pound, this would be the showing:

Receipts, as above given.....	\$95,021,384.17
Additional revenue from 176,351,613 pounds third-class matter, at 8 cents.....	12,344,612.91
Total receipts.....	\$107,365,997.08
Total expenditures.....	101,632,160.92
Surplus.....	\$5,733,836.16

This is what the financial exhibit of the postal service for the year would be if the matter carried through the mails were classified and rated as the law intended it should be. It would show a large surplus instead of a large deficit.

Following these figures the report states that while this wrongly classed matter amounts to one-fourth of all mail carried it pays but one fifty-fifth part of the revenue, and by reckoning the cost of transportation at 8 cents per pound, carrying service costs the Government \$14,108,129.04, and the return in revenue being but \$1,763,516.13 there is a net loss of \$12,344,612.91.

#### Character of Offenders.

As to the character of the abuses which lead to this loss Mr. Smith says:

The first is the paper covered books put out under pretense of being serial publications. They have nothing of the nature of periodicals. They do not possess a single one of the attributes which Congress meant to require in publications that should be entitled to the second-class rate. Their "consecutive numbering" is a travesty; their issuance at "stated intervals" a parody; their "subscription list" a fiction; their claim of being published "for the dissemination of information of a public character" a burlesque. There is nothing to distinguish them in substance from bound books, and the discrimination in their favor is most unjust to the publishers of finer literature.

The second abuse is connected with the advertising "house organ" and the so-called trade journal. One of my predecessors, Postmaster-General Bissell, characterized it as the "bogus trade journal." There are many genuine trade journals which are as legitimate as any periodicals and justly entitled to all their privileges. These are not included in the criticisms. But the trade journal described is simply an advertising scheme. It is not designed to disseminate information of a public character and has no standing as the exponent of any trade or industry. These prints do not conform in any just sense to the requirements of the law, but offer only a nominal and technical conformity.

The third abuse grows out of the privilege of sample copies. The sample copy of a regularly admitted paper or periodical, counting for support upon its merits, is presumably designed to induce a new subscription by exhibiting its merits in a new quarter. But, as a matter of fact, in many instances the sample copy has become not the individual exhibit, but the potential cloak of a thousand times multiplied distribution without regard to subscriptions and solely as the plea and pledge for advertising.

#### Remedies Suggested.

The Department alone is powerless to remedy the evils. Though they violate the policy and purpose of the law yet they are shielded by its want of precision respecting subtleties and devices which could not have been anticipated, and by constructions which restrict freedom of administrative action. For this reason the difficulty must be cured by the law making power. The points to be reached are clear and well defined. It is vital to re-establish in their proper classification and forbid the privilege of the pound rate to serial libraries of books, to "house organs" and other sheets of an exclusive advertising character, to sample editions for advertising purposes, to advertising circulars which are masked under the names of fraternal societies, to returns by news agents of unsold periodicals, and to schemes by which publishers pervert their prerogatives by sending matter in their own names at the pound rate for advertisers and purchasers who have not the privilege.

## The Iron Industry of Jackson County, Ohio.

BY S. S. KNIGHT, JACKSON, OHIO.

There is probably no other section of equal area in the world that has witnessed the erection and demolition of as many blast furnaces as that of Jackson County, Ohio. Comprising as it does a little less than 300 square miles of territory, it has been the birthplace of no less than 23 blast furnaces, some of which have been in almost continuous operation for more than 30 years.

### Historical.

Beginning with the erection of the Latrobe furnace (1834) in the early dawn of the iron industry in the United States, hardly a year passed that did not see inaugurated some new furnace enterprise. And, as in the case of the first furnace, the campaigns have been curtailed by financial panics except in a few instances where constant effort strove to keep these furnace plants abreast of the time. In 1839 the Jackson furnace was built, in 1849 the Keystone, in 1851 the Buckeye, and in 1853 the Cornelia. In 1854 the Cambria furnace was built, and in the same year the Madison furnace started its first campaign on native ore and charcoal, while to-day it is running on West Virginia coke and Lake Superior ore. In the same year the Jefferson and Limestone furnaces lighted their fires; in 1856 the Monroe and Diamond were added to the list. It is to this last named furnace, now entirely razed, and even the place of its location unmarked except by two bottoms and the sandstone cliff, that the honor belongs of first using stone coal as fuel in this county, and its mines are still open, although long since abandoned. The coal they used came from the same Sharon seam that is now supplying the furnaces of Jackson, the county seat. This coal, while not as good as the overlying seam, the Quakertown or Wellston, is still remarkably free from sulphur and low in ash. An analysis of it will be found elsewhere.

In 1857 the Young America furnace was built, in 1864 the Orange, and in 1866 the Star, which is the oldest furnace maintained in continuous operation in the county. In the same year the Ophir furnace was also built. In 1868 the Fulton furnace was lighted, and it also is still assisting in keeping the name of Jackson County associated with the highest grade of pig iron softeners produced. In 1872 the Tropic and Globe furnaces were erected, in 1873 the Milton furnace, and in the next year the two stacks of the Wellston furnace were completed, and these last three furnaces are still in operation. In 1875 the Huron furnace was completed, and in 1877 the Eliza began her first blast.

As to the quantity of pig iron produced by these 23 furnaces nothing definite is known, but a conservative estimate would be 2,250,000 gross tons. Of this a large percentage was charcoal iron of the same general character as that which made Southern Ohio famous the world over.

### Present Furnaces.

Of the five furnaces still in continuous operation but two are what would be considered at all modern—namely, the Milton furnace, at Wellston, owned and operated by the Wellston Iron & Steel Company, and the Star furnace, at Jackson, operated by the Star Furnace Company. The first of these is equipped with three fire brick regenerative stoves of the earlier Whitwell pattern and two blowing engines capable of throwing 15,000 cubic feet of air per minute. This furnace is using largely Lake Superior ore and coke, while the Star furnace is using native ore and mill cinder and raw coal largely as fuel. This latter furnace has two fire brick regenerative stoves of the latest Foote design, and will soon be equipped with two blowing engines having a capacity of 23,000 cubic feet of air per minute.

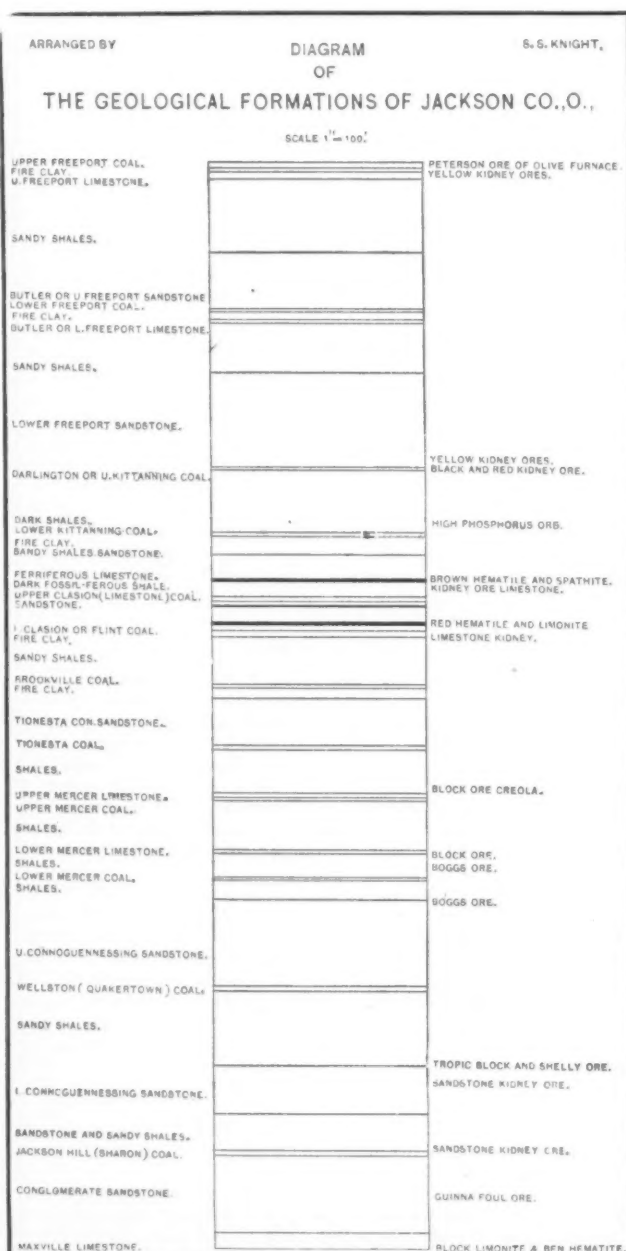
Of the three remaining furnaces the Fulton furnace is located in Jackson, and although at present a very much out of date plant, will soon be thoroughly modernized by the erection of two fire brick stoves of the latest pattern and a new blowing engine as well as a new stack. This furnace is owned and operated by the Globe Iron Company of Jackson, and uses native ore and mill cinder and a large percentage of raw coal as fuel.

The two stacks of the Wellston furnace are in a more or less antiquated state, being equipped with two iron pipe stoves each and two double horizontal blowing engines. One furnace has been run on lake ore and coke, producing high grade malleable iron and extra strong foundry. The other stack has remained idle for some years, but the owners of these furnaces, the Wellston Iron & Steel Company, expect to have both stacks in blast before this goes into print. The Madison furnace has lately been blown in by this same company, but almost without any improvement whatever; consequently a very short campaign is all that can be expected from it.

As furnaces are usually located in the immediate vicinity of the places of occurrence of the raw products upon which they are dependent, it will be evident that Jackson County must possess these in abundance. And this is the case, as in no other locality ever visited by the author did nature seem to be more bounteous with her mineral gifts. All the older furnaces used charcoal for fuel, and the well wooded hills provided material for this in great abundance. And so much of this was used that timber of virgin growth is a thing unknown in this county, all the trees being young and small. When this fuel supply was exhausted the furnacemen naturally took to the coal which was known to underlie the whole county.

### The Coal Seams.

The lowest seam is the Sharon vein, which conformably overlies the conglomerate rock. This vein is from



20 to 48 inches thick, and is usually accompanied by a good roof. This is known as the Jackson Shaft coal, and is the vein from which the furnaces of Jackson, the county seat, draw their entire raw coal supply. When properly mined from the hills it shows a composition very nearly approximating the following analysis:

	Per cent.		Per cent.
Moisture and volatile matter	43.00	Sulphur	0.40
Fixed carbon	52.00	Silica	3.00
Ash	5.00	Alumina	1.50

Its composition seems, however, quite dependent upon the amount of covering it has, as coal taken from this same seam from a shaft 50 feet deep has been known to carry as high as 18 per cent. ash and over 1 per cent. of sulphur, while the face of the vein at this point was over 7 feet. Two important characteristics of this coal are that it lies upon an uneven floor and in pockets of comparatively small extent. These add greatly to the uncertainty of any mining operations connected with it, and it



is only on account of its excellent quality that operators are justified in basing any business enterprises upon it. Several mines have been opened for taking out this coal at a considerable cost, which have had to be abandoned before any return whatever could be made upon the investment.

About 75 feet above this seam lies the Wellston or Quakertown vein of varying thickness, but usually containing from  $3\frac{1}{2}$  to 5 feet of marketable coal. Its quality is about the same as that of the Sharon vein, being somewhat lower in ash and always higher in moisture. Its fine open burning qualities rank second only to that of the Jackson Shaft coal. Wherever it has been used for furnace fuel it has been found to be admirably adapted to this purpose.

The lower and upper Mercer coals together with the Tionesta and Brookville coals may be passed by without further mention, the seams being so thin in this county that their only value is their use as a means of identification of the limestones and ores which lie upon their respective horizons.

The Lower Clarion coal is of no importance from an economic standpoint, but the Upper Clarion seam attains quite a thickness in the hills in the northern part of the county, sometimes approaching 6 feet. It is quite low in ash, but is very high in sulphur, sometimes containing over 2 per cent., thus putting it outside of the class of furnace coals. Several mines have been opened in this seam, but none are in active operation to-day.

The Kittanning and Freeport coals are not commercially mined in this county, and no formations above the Upper Freeport coal have been identified.

It is only fair to state that popular judgment has settled the fact that none of the coals found in the county are capable of coking. It remains, however, to be proved, as no attempt has yet been made to coke the only coals whose composition would allow of their commercial use—viz., the Sharon and Quakertown veins. Since so much advancement has been made in the art of coking coals it would seem that material of so favorable composition could certainly be operated upon successfully, even in the old beehive ovens, leaving out of consideration entirely the retort ovens, which so signally succeeded in places where the older types had utterly failed. Nothing but a trial with the material in question can ever positively settle this much disputed point.

#### The Iron Ores.

Turning now to the iron ores, there is found in Jackson County, or nearly contiguous to it, all grades of ore, excepting only Bessemer ores, that almost any kind of iron can be produced entirely from native products.

Beginning with the block ore of the sub-carboniferous or Maxville limestone, which makes its only appearance in this county in Hamilton Township, the ore series is begun with a brown hematite or limonite about 6 inches thick. This ore is not mined at present, and probably never will be again.

The next ferriferous deposit, proceeding upward, is the Guinea Fowl ore, and although it occurs in a few localities in the county, it is seen to best advantage in the neighborhood of Portsmouth, Scioto County, where it attains its maximum thickness. A sample taken from this place shows the following analysis, the ore being a brown hematite:

	Per cent.		Per cent.
Silica .....	56.00	Sulphur .....	0.164
Iron .....	28.57	Manganese .....	0.672
Phosphorus .....	0.69	Alumina .....	0.87

Wherever found it is very siliceous and correspondingly low in iron, and in no place has a greater thickness been reported than  $8\frac{1}{2}$  feet.

The sandstone kidney ores found at the Sharon coal horizon are lean in iron, rarely containing more than 20 per cent., and more often not over 15 per cent. of metallic iron. The remainder is nearly pure silica, but a small portion of which is chemically combined with the iron. These ores frequently carry a small percentage of free carbon.

Lying at the top of the Lower Connoquenessing sandstone is found the most valuable deposit of sand block ore known in this county. It lies in pockets on top of the hills to the west and southwest of Jackson. It is found only in this one vicinity, and not in this direction at a greater distance than 8 miles. This ore properly lies in two veins, the upper of which is shelly and from 12 to 18 inches thick. It is a siliceous brown hematite ore of the following composition:

	Per cent.		Per cent.
Silica .....	34.30	Sulphur .....	trace
Iron .....	34.84	Manganese .....	0.528
Phosphorus .....	0.882	Alumina .....	5.10

This ore, as taken from Tropic mine, contained 1 per cent. of free carbon and lay conformably over the red block ore directly beneath it and filling up all the fissures in it, as the photograph clearly shows. The lower vein is a sand block ore of much greater thickness and far more persistent than the upper stratum, it having reached

a thickness of 10 feet in the middle of a hill, and covering an area of 6 acres. At the outcrop of this deposit it was not more than 3 feet thick and did not carry the shelly ore at all. From the Tropic mine alone over 150,000 tons of ore was taken. It is mined only by stripping, as the bench is never more than 12 feet deep, the cost of mining often being no more than 15 cents per ton. An analysis of this lower vein showed:

	Per cent.		Per cent.
Silica .....	48.80	Sulphur .....	0.09
Iron .....	28.14	Manganese .....	0.66
Phosphorus .....	0.502	Alumina .....	6.30

Usually this block ore has a deep red color, readily distinguishable from the brown or black appearance of the shelly ore above it.

At the base of this block ore, and often separated from it by only a few inches of clay, is found a sandstone kidney ore of more or less value. When at its best it carries about 25 per cent. of iron, and is much used by the Jackson furnaces when making silvery iron. It is never more than 12 inches thick, and often only 6 or 8.

Lying upon the Upper Connoquenessing sandstone is found the Boggs or Flag ore. This is a deposit consisting of a siliceous carbonate of iron intermixed with shale. It occurs in largest quantities at South Webster, Scioto County, where it reaches a thickness of 7 feet. An analysis taken from a carload sample showed:

	Per cent.		Per cent.
Silica .....	17.40	Manganese .....	0.81
Iron .....	31.23	Alumina .....	8.08
Phosphorus .....	0.24	Calcium oxide .....	8.15
Sulphur .....	0.11	Magnesia .....	1.06

Some 20 years ago quite a quantity of this ore was used by the Jackson furnaces, but the requirements of rapid driving soon relegated it to the list of ineligible ores. At present it is not mined at all.

Concerning the block ores that lie at the Lower and Upper Mercer limestone horizons, it need only be said that they have entirely disappeared from use in this county, being too thin and lean for commercial purposes, although wonderfully persistent. The little limestone block, the little sand block, and the red block ores are purely provincialisms applied to ores found at this level. Were it not for the Creola ore of Vinton County this horizon would not be worthy of mention. The Creola ore, which is mined entirely by stripping, reaches a thickness of from 24 to 30 inches, but rarely carries more than 35 per cent. of iron, although selected samples have shown 45 per cent. metallic iron. It is a brown hematite or limestone carrying a fraction of 1 per cent. of free carbon. It lies at the level of the Upper Mercer limestone.

The next ore in the ascending series is a limestone kidney ore and lies about 40 or 50 feet below the ferriferous limestone. About 20 years ago it was worked by stripping in Milton township, where it was sometimes found 18 inches thick. It lies underneath the Lower Clarion coal, and frequently over a flinty limestone. On account of the almost impossible task of keeping it clear from flint, and its tendency to diminish or disappear toward the hill, it has been entirely abandoned.

Above it, however, and at the horizon of the Lower Clarion or flint coal, as it is called in this county, is found one of the softest and easiest ores for furnace work of the whole list. It lies in pockets in the hill, usually not containing over 500 tons, but sometimes reaching 2000 tons. On the outcrop it is sometimes changed to a spongy limonite, but the ore itself is granular, and by far the finest ore found in the native state. It is a bright red hematite, low in phosphorus and very siliceous. An analysis of a sample taken from a 200 ton lot showed as follows:

	Per cent.		Per cent.
Silica .....	38.00	Manganese .....	0.81
Iron .....	34.55	Alumina .....	4.80
Phosphorus .....	0.14	Calcium oxide .....	2.50
Sulphur .....	trace		

Large deposits have been found that contained from 38 to 40 per cent. of metallic iron, and phosphorus as low as five-hundredths of 1 per cent. has been reported. So far this ore has only been found in the region east and north-east of Wellston for a distance of 5 or 6 miles, but no explorations have ever been made elsewhere for it. It is not probable, however, that it is of great extent, or it would have been reported previously, and also because it is found in very thin outcrops directly overlying the limestone kidney ore, just before mentioned, further east. It disappears entirely at a distance of 200 feet toward the hill, although it lies around the hill sometimes for over  $\frac{1}{2}$  mile. It has been found as thick as 3 feet, and never with more than 7 feet of covering.

The next and by far the most valuable of all the Jackson County ores is that overlying the ferriferous limestone and from which it takes its name. It occurs in many places as a brown hematite, rich in iron and remarkably kind for furnace use. It was upon this ore that almost all the charcoal furnaces depended, and from which was made the iron that made the region of Southern Ohio famous in the iron markets of the world. It is



found also as a spathite ore, and in some places as an oxide of iron in limestone. This latter formation is wrongly called, provincially, "bastard lime." When found as a brown hematite it usually lies from 12 to 30 inches thick and shows approximately the following analysis when properly mined:

	Per cent.		Per cent.
Silica .....	11.20	Manganese.....	1.008
Iron.....	48.24	Alumina.....	5.25
Phosphorus.....	0.25	Calcium oxide.....	0.67
Sulphur.....	0.106		

Selected samples have shown over 50 per cent. of metallic iron, while 45 per cent. may be considered a minimum showing. When found as a carbonate of iron it usually is accompanied by a fire clay of almost the same color, so that clean mining becomes a matter of prime necessity. When carefully mined it will show somewhere near the following analysis:

	Per cent.		Per cent.
Silica.....	10.60	Sulphur.....	0.122
Iron.....	36.43	Manganese.....	0.988
Phosphorus.....	0.27	Alumina.....	1.60

Carload lots when carelessly taken out have been reported as low as 22 per cent. of metallic iron. This ore does not lie as thick as the brown hematite, nor has it as good a roof. Both ores are largely mined by drifting, although the former is everywhere preferred. As usually found they are too deep to be mined by stripping, unless taken out altogether with the underlying limestone.

The so called bastard lime comes from the same horizon and lacks only the clay or shale that separates the ore from the ferriferous limestone itself. Otherwise stated, where the ore entirely supersedes the limestone we have the bastard lime formation. This ore, as found in the southern part of the county, shows an appearance much like the spathic ore of the South, being hardly discernible from limestone. It is darker in color than the limestone and heavier, as it is relatively richer in iron. An analysis of this ore resulted as follows:

	Per cent.		Per cent.
Silica .....	8.50	Manganese.....	0.67
Iron.....	37.21	Calcium oxide.....	9.06
Phosphorus.....	0.265	Alumina.....	1.88
Sulphur.....	0.07		

It works very well in the furnace, but owing to its similar appearance to the limestone it is an ore that cannot be mined so as to be uniform. It is often found from 4 to 6 feet thick, and if it could be properly mined would make one of the best ores of the county, although of uncertain quantity.

About 35 feet above the ferriferous limestone ore lies the high phosphorous ore of Hamden furnace. But comparatively little of this ore has been mined, and this has been in Lawrence and Vinton counties, but there is no reason for thinking that at the proper level it should not be found in Jackson County. It lies under but a few feet of covering, usually not exceeding 10 feet, and often reaching a thickness of 8, and even 11 feet are reported. It is a soft ore, lying in large blocks and of a dark brown appearance. Where weathered on the outcrop it has the yellow appearance of limonite, but as found in the mine it is a brown hematite. It has always been mined by stripping. An analysis of a sample taken from a 50-ton lot showed as follows:

	Per cent.		Per cent.
Silica.....	6.70	Manganese.....	0.864
Iron.....	38.86	Alumina.....	12.75
Phosphorus.....	4.08	Calcium oxide.....	1.70
Sulphur.....	trace		

The worst features about this ore are its high phosphorus and alumina, but by proper use both these could be turned to good account.

This completes the range of ores as found in or near Jackson County, except for a few scattering kidney ores of no value and the ore found at the Upper Freeport coal horizon. These are shown in their true position in the diagram.

#### Limestone.

As the blast furnace industry is so dependent upon limestone for flux where siliceous ores are used, it is only proper that a few words should be said concerning the abundance of this material. All that has been extensively mined has been taken from the ferriferous limestone vein, which in many places in the county reaches a thickness greater than 12 feet. Its quality is most excellent, as shown by the following analysis:

	Silica. Per cent.	Alumina and iron oxide. Per cent.	Calcium carbonate. Per cent.
Sample No. 1.....	1.04	1.00	97.40
Sample No. 2.....	1.30	2.90	95.40

Sample No. 1 was taken from the south central part of the county, while No. 2 came from the extreme northeastern part. It is not only pure enough to be an excellent furnace flux, but to be used in the manufacture of Portland cement.

#### Summary.

Summing up the situation, there seems to be no place more favored than Jackson County for the location of blast furnaces, even with all that modern practice implies. The time has arrived when the successful operation of a furnace does not entirely depend upon the immediate proximity of a large body of suitable ore, although this is a phase of the question which cannot be properly overlooked. Railroad facilities however, are the important factor in competition. With this in view, Jackson County will still hold its own. There are two sites now vacant which can command three railroads, two of which can be counted proper carriers of lake ore and the other being the line which penetrates the very center of the rich ferriferous limestone region of this county. With native ore enough in sight of a quality which could be profitably worked either upon the silvery or upon foundry irons to maintain no less than five furnaces of modern size for years, and the fuel and limestone so near at hand, it would seem that certainly in the near future capital would take advantage of this opportunity for a safe investment with profitable returns assured, and that the glory of Jackson County, which has once departed, would return to inaugurate a new period of activity in the production of pig iron.

NOTE.—All analyses given were made by the author.

**University Museum of Philadelphia.**—The formal opening of the University of Pennsylvania Free Museum of Science and Art will take place on December 20. This museum is the outgrowth of a movement started by the late Dr. Wm. Pepper. Sufficient money for the building was obtained from the State and by donation. The city gave 9 acres of ground for the erection of the building. The architecture is that form which prevailed in the north of Italy from the twelfth to the fourteenth century. The buildings extend along three sides of a block. The entrance, which is on South street, is beneath a broad stone gateway. A bronze statue of Dr. Pepper has been placed in the grounds and will soon be unveiled. One of the most interesting collections in the building and said to be the finest of its kind in the world is the collection of interesting things from Rome gathered together by Dr. W. H. Furness, Dr. H. M. Hiller and Alfred C. Harrison, Jr. The library was presented by Mr. Elkins and has a shelf capacity of 15,000 volumes.

Dr. Ludwig Mach has successfully alloyed aluminum with magnesium and thereby obtained a compound which can be worked like brass, and which is lighter still than aluminum. The densities of the two metals are: Magnesium, 1.75; aluminum, 2.75; they both melt at 800 degrees C and their dilations amount to 0.023 and 0.027 mm. per meter and per degree Centigrade. The metallurgical properties depend upon the composition of the alloy. A 10 per cent. magnesium alloy resembles zinc, a 15 per cent. alloy is like brass and a 25 per cent. like a compound bronze. The alloys can be soldered, it is stated, though that point does not appear to be fully settled, keep well in dry and damp air and give good castings. The alloy is almost as white as silver and so hard that it is possible to cut aluminum with a sharp edged piece of magnalium. It can be turned, bored, &c., quite as well as brass, and clean and neat threads of  $\frac{1}{4}$  mm pitch can be cut with ease. It does not file so readily as brass, but is superior in this respect to copper, zinc and aluminum. Magnalium is suitable for lens mountings and would make good divided circles and arcs for instruments in which light weight is a consideration. If bought by volume it is a little less expensive than brass.

The University of Pennsylvania is in receipt of a gift of \$250,000 to be used for the building and equipment of a laboratory of physics. The building will be located on Thirty-fourth street, facing the library, and will be within about 500 feet of the college building and the same distance from the Harrison Laboratory of Chemistry. This will add needed facilities both for undergraduate and graduate work and strengthen the courses in engineering as well as in pure physics. The completion of the building will see a largely increased staff and a probable division of the work between Professor Barker, who will have charge of the graduate work, and Professor Goodspeed, who will be in charge of the undergraduate. The university has now under construction or in the hands of the architects buildings valued at over \$1,000,000, including a new law school costing \$350,000, addition to the dormitories valued at \$250,000, a new medical laboratory costing \$500,000, in addition to the new building for physics.

One of the Eliza Furnaces of Laughlin & Co. at Pittsburgh has been running for over seven years on one lining. This is probably the world's record in blast furnace practice for continuous blast.

## Canadian News.

### Ontario's New Nickel Policy.

TORONTO, December 2, 1899.—The order in council passed by the Ontario Government in regard to the nickel lands of the province is not the disturbing influence that the majority of Canadian newspapers and people seem to take it to be. Upon the sources of the current exportation of nickel it has no effect, and nothing that it is in the power of the Provincial Government to do can have any effect. Most if not all the crude nickel exported is from the mines and works of the Canadian Copper Company. The produce of that company's mines is beyond the reach of the Ontario Government. The company hold not mining rights but all the land they operate on in fee simple. They are not working under a patent or license permitting them to take ore from Crown lands. The land is their own. In the minds of many people the claims of the company were supposed to be similar to those of the Michigan lumbermen who purchased rights in the pine region of the Georgian Bay District, south and east and west of Sudbury. The Ontario Government, under authority of an act of the Legislature, last year adopted a regulation requiring all logs cut on the Crown lands to be manufactured into lumber before exportation. This put a stop to the rafting of Georgian Bay logs to Michigan mills. The Michigan holders of Georgian Bay limits protested and a case was submitted to the High Court. It was decided the day before the new nickel policy was announced. The judge held that the province had the power to apply such a restriction to timber on the Crown land. This decision and the nickel order in council that immediately followed were put together, many imagining that the Government was hastening to extend the power thus confirmed from the timber to the minerals. But in the case of the timber the land remains the property of the Crown. In the case of the chief exporters of nickel the land is their own. The minerals are not even subject to a royalty.

Of course the Ontario Government does not pretend that its order affects the sources from which raw nickel has been exported for several years. The second clause of that order, however, contains a promise that the Ontario Government will appeal to the only power that can restrict the exportation of ore and matte from private lands. This is the Dominion Government, which has jurisdiction over trade and commerce and which consequently could impose an export duty on nickel ore and matte, an export duty large enough, if need be, to stop the outward movement of the metal in these forms. Now since June, 1897, there has been on the Dominion statute book a law prescribing an export duty of 10 cents per pound on all the nickel content of ore and matte. But the enforcement of it has been left by Parliament to the discretion of the Ottawa Government, which has steadily resisted every petition to give effect to the act. Very strong influences have been exerted to induce Sir Wilfrid Laurier to let the duty go on, assurances having been given to him that millions would be invested in nickel industries here the moment he should proclaim the act. But he did not yield. It is extremely doubtful if he will do so at the solicitation of the Ontario Government. As the two Governments are of the same party it is most unlikely that the Provincial Government will bring any pressure to bear on Sir Wilfrid. Hence it is improbable that an export duty has been brought any closer by the Toronto order in council.

The order contains two other provisions. One is for the inviting of the British Government to take an interest in the nickel lands, agreeing on its part to utilize its interest in such a way as to bring into existence here works for the manufacture of nickel steel armor plate. Once before, in 1891, such a proposal was made to the Imperial Government, but it was politely declined. And there is hardly a doubt but that it will be again. The third proposition of the order in council concerns nickel lands yet in the hands of the Crown. All patents of such lands issued hereafter are to contain a provision prohibiting the exportation of nickel from them until it is refined. What extent of valuable nickel lands yet remain the property of the Crown is unknown. It may be great or it may be small. One thing is certain: It will be a long time before the exportation of crude nickel will be affected by this provision. The order in council is a very hollow concession to those who have been agitating for a restriction of nickel matte exports.

### British Iron and Steel.

This season has witnessed a marked revival in the importation of British pig iron. That once great trade had died down to almost nothing, having succumbed to the competition at closer quarters of the Canadian and American manufacturers. But this year the demand for pig iron outran the supply from furnaces on this side of the water. British iron had to be brought in and for the first time in many years the importation was relatively

profitable. To Montreal considerable quantities of Scotch pig were brought, as well as British steel and structural iron. It is this importation that has caused the figures showing Canada's purchases from Britain to show so great an increase as compared with last year. The "Corean" has 100 tons of British pig iron for Halifax, which it is said is to be used in the Londonderry Pipe Works on an order for the Dominion Iron & Steel Company's works.

### Trade Items.

The Canadian Rand Drill Company have got into their new shops at Sherbrooke, Quebec.

The Walker plumbago mines and graphite works at Birmingham on the Ottawa were sold on the 28th ult. for \$70,000.

Collingwood ratepayers voted on the 30th ult. upon the by-law to grant a bonus of \$50,000 to the steel ship yards referred to in this correspondence a few weeks ago. The by-law was carried almost unanimously.

The Freight Rates Committee of the Toronto Board of Trade has passed a resolution protesting against the recent action of the railways in abolishing the special rates on iron commodities, &c. In the resolution the roads are accused of discriminating in favor of the United States.

C. A. C. J.

### Sea Coast Defenses.

Elihu Root, Secretary of War, in his annual report deals with the plans of seacoast defense as follows:

The recent progress has been rapid and gratifying. The present condition of the engineering work is such as to permit of effective defense against naval attack at most of the principal ports of the country when the guns are provided and properly manned. . . . At the end of the fiscal year, June 30, 1899, provision had been made for emplacing 297 heavy guns, 308 rapid fire guns, and 344 mortars, being about 60 per cent., 87 per cent., and 34 per cent., respectively, of the aggregate number of heavy guns, rapid fire guns and mortars projected for the defense of the seacoast. The number of heavy guns completed up to November 30, 1899, was 83 8-inch, 114 10-inch, 83 12-inch, and 269 mortars. Under the provisions of the Fortifications act approved March 3, 1899, additional contracts have been placed for five sets of 10-inch gun forgings, 15 sets of 12-inch gun forgings and 38 sets of 12-inch mortar forgings. Three hundred and fifty-eight 12-inch mortars in all have been completed or are under manufacture. Six hundred and five seacoast gun carriages of all classes had been delivered by the Ordnance Bureau up to June 30, 1899, of which 216 were delivered during the fiscal year ending at that time. Three hundred and eighty such carriages remain under manufacture. The entire amount expended in the plan of seacoast defense down to June 30, 1899, was \$45,979,285.93. There still remain to be provided for under the plan 171 heavy guns, 452 rapid fire guns, and 679 mortars. The total cost of completing the work is estimated at \$63,274,766.

### The Waukegan Wire Mill.

The American Steel & Wire Company have actively begun the work of rebuilding the wire mill at Waukegan, Ill., recently burned. The mill will be rebuilt on entirely modern lines and equipped with the most improved machinery in all branches. The galvanizing room will be enlarged by adding 70 feet at the north end of the building. Altogether over 100,000 square feet of additional floor space will be provided, consisting of mattress wire, tinning and drawing departments, a large increase in the cleaning house department, and a separate building for barb wire, bale ties, and straightening, cutting and special wire machinery. The company have contracted for one of the latest improved vertical cross compound engines, made by the E. P. Allis Company of Milwaukee, capable of developing 3300 horse-power. They will also put in a completely new electrical power plant for driving the galvanizing, mattress wire and specialty departments.

**Lignite Briquettes.**—We are officially advised that a test of briquettes produced from North Dakota lignite was recently made at St. Paul, Minn., under the supervision of a representative of the Northern Pacific Railway Company. The test indicated that the fuel was sufficiently good to displace Eastern coal on a section of the company's road, say from Fargo to Glendine. A provisional agreement has been made for a certain quantity of the fuel with the parties controlling the process of manufacture.

The National Export Exposition at Philadelphia closed on Saturday after a successful run of two months and a half. During the time it was open the exposition was visited by 1,250,000 people.



### The Terminal of the Pittsburgh & Lake Erie Railway.

The Pittsburgh & Lake Erie Railway, operating through a rich manufacturing district of Pennsylvania and Ohio, with trunk connections running east and west, will shortly have by far the most handsome and extensive terminal station in Pittsburgh. Several important undertakings for giving increased facilities are being carried out by the Pittsburgh & Lake Erie Railway. The shops and yards at McKee's Rocks will be completely rebuilt at a cost of about \$500,000, and Westinghouse, Church, Kerr & Co., Pittsburgh, have received a contract for an extensive and elaborate equipment for a new terminal station.

All the engineering specifications and designing having been prepared under the direction of J. A. Atwood, chief engineer of the Pittsburgh & Lake Erie, the general plan, as well as the details, will be as complete as those of the South Station of the Boston Terminal Company, which was also designed and erected by the same engineers. The present contract includes a power house equipment, a wiring installation for electric arc and incandescent lighting, elevators for passengers, freight and dumb waiter service, heating and ventilating the head house and other buildings, a plant for filtering, purifying and mechanically cooling drinking water, a system for heating cars in the train shed and coach yard, apparatus for furnishing a supply of compressed air for car cleaning, train brake and signal testing &c.; means for fire protection, a pumping plant for disposing of drainage water, and a system for the general supply of hot and cold water for the railway terminal and office buildings.

These varied services will together constitute a complete engineering equipment. Each portion is merely a branch of the system, but by employing one firm of engineers to design the whole, large gains have been secured in simplicity of design, in first cost and in operating expenses.

The equipment of the power house includes a plant with its accessories, of sufficient capacity to provide for all the exigencies of heating, lighting and power purposes, and in addition adequate provision is made for relay, and for extensions should they become necessary in the future. The boilers will be of the water tube type, each being equipped with a Roney mechanical stoker and smokeless furnace. Coal and ash handling machinery having a capacity of about 35 tons of coal per hour will be provided in the boiler house, that the furnaces may be supplied automatically. A self supporting steel stack, lined with brick throughout its entire length, will furnish draft to the furnaces, and will be of sufficient size for providing draft for additional boilers when installed. The engine equipment will consist of five 14 x 24 x 14 Westinghouse single valve, compound automatic engines, to be operated non-condensing with steam at 125 pounds pressure, and will be provided with single weight inertia governors. Each engine will be direct connected to a 120-kw. Westinghouse multipolar direct current "engine type" generator, delivering current at 125 volts. Each of the engines with its generator will be mounted upon a heavy cast iron bed plate. The steam piping of the power house has been designed with a view of securing the greatest freedom from internal strains due to expansion or contraction. There will be no pockets except those provided for the purpose of handling entrained water, and a system of separators and steam loops will return such water automatically to the boilers. Provisions will be made for treating and purifying the water for feeding the boilers. The power house will have an overhead traveling crane of sufficient capacity to handle all parts of the engine room machinery.

The electric wiring installation has been very ingeniously designed that the operator at the main switchboard may control every part of the system. Local distributing centers will be connected with the switchboard by two wire feeders. Pressure wires and an annunciator system connect the power house with the distributing centers, and so arranged that co-operation is secured between the local operators in the various departments and the power house attendants. This arrangement is made necessary and desirable by the stations of the various distributing centers with reference to the power house, and from considerations of convenience in operation. The feeders will be mainly of open work construction, with porcelain insulators, and the tap circuits will be conduit construction, using unlined iron conduits and rubber covered wire. Raceways will be provided for telephone, bell and other small wires in addition to the lighting circuits. The entire lighting installation will comprise about 3700 incandescent and 70 arc lamps.

The elevators will be operated electrically, supplied with power from the same bus bars as supply current for the lighting system. There will be two passenger elevators, and one for freight service, and two dumb waiters.

Heating and ventilation have received the closest at-

tention. A supply of fresh air will be provided, tempered to 70 degrees, for the rooms in the head house which are regularly occupied, perfect ventilation being secured by a change of air every 15 minutes. Direct heat is furnished to the rooms in the head house by means of direct radiators, which will compensate for leakage and other losses, maintaining the temperature at 70 degrees. The main waiting room will be warmed wholly by the indirect method. Exhaust ventilation, in addition to the fresh air supply, is secured by two exhaust fans placed in the upper part of the building, one of which will exhaust the vitiated air from the offices and the other from all the lavatories. In addition there will be a third exhaust fan in the basement for the removal of foul air from the main waiting and first floor rooms. The lavatories will be provided with an entirely separate set of ducts, connected with a separate fan. No air will be supplied directly to the lavatories, the air movement being from the surrounding rooms toward fixtures, and through fixture vents to the duct system, through which the air will be discharged above the roof, thus greatly improving the sanitary condition of rooms that in railroad stations are often very objectionable.

The waste steam from the main and auxiliary engines in the power house will be used for supplying heat. Water, rapidly and positively circulated, heated by this waste steam, will convey the necessary heat through the circulating system to the direct and indirect radiators. Provision will be made for filtering and purifying the air before being distributed to the buildings, and for furnishing clean air to the offices during warm weather.

Great care will be taken with the drinking water distribution. A plant will furnish cooled drinking water to some 40 or 50 outlets in various parts of the building. It will be distilled, filtered and chilled in cypress tanks, by means of submerged direct expansion ammonia coils. This chilled water will be pumped through pipe circuits to the water taps in the offices and corridors on the various floors. The distributing system is so arranged that the chilled water will continuously circulate close to the outlets, thereby providing a cooled supply without unnecessary waste at the faucets. This plant will have a capacity for cooling 1500 gallons per 24 hours to 40 degrees F. The pipes of the circulating system will be covered with non-conducting material to reduce the loss through radiation and to prevent the condensation of moisture on the piping.

To provide the necessary heating for cars in the station when the locomotive is detached, a steam supply will be taken from the auxiliary line of steam piping in the power house and will be connected with the existing system leading to the various stub tracks in the station. Facilities will be provided for warming 30 cars simultaneously.

Compressed air will be furnished for various purposes. It will be supplied from a steam driven air compressor and from a small air pump in the main power house, distributed through pipe systems connected with apparatus for car cleaning, air brake and train signal testing, a pneumatic tube service, and an interlocking switch and signal system. In addition to the large air compressor for regular service, a 9½-inch Westinghouse air pump will also be erected to perform service when only a small quantity of air is required, or to handle the most important service in the event of an accident to the large compressor. The total rated capacity of the two compressors will be 531 cubic feet of free air per minute, and a large reservoir capacity will be installed to provide a liberal air storage.

Protection against loss by fire will be secured by a pipe system with fire hose attachments, placed within the building, connected with the high pressure water pipes of the Monongahela Water Company.

An electrically driven centrifugal pump will be installed for freeing the sump well which will be built in the power house to catch the seepage or other water which may find its way to the well through a system of drains to be provided for the purpose. The pump will have a capacity of 1000 gallons of water per minute, against a head of 23 feet, and in addition to the possible seepage it is intended to remove emergency water which may find its way to the basements at times of extreme high water in the adjoining river. This pump, of the centrifugal type, with vertical shaft, will be driven by a Westinghouse special vertical iron clad motor connected at the upper end of the shaft, and will start and stop automatically by means of a float arrangement and controlling apparatus.

The general supply of water will be provided from a well to be built near the power house. The water will be delivered by a pump with a capacity of 225 gallons per minute, and will be distributed for feeding the boilers, for the drinking water system, for a general supply to the head house, and for providing heating water to sinks, bowls, &c. The heating plant for the hot water is placed in the basement, and will have a nominal capacity of 400 gallons per hour, heated to 212 degrees F., the heat being supplied through copper coils in the heater connected with the live



steam system, the amount of steam being regulated to maintain any desired temperature by an automatic thermostat valve. Hot water will be provided at 73 outlets in the head house. This main supply pump will be connected with a double system of piping now buried in the railroad yard, and through this system to a proposed storage tank of some 100,000 to 200,000 gallons capacity.

The foregoing enumeration of the several branches of work connected with this railroad terminal shows the large range of engineering skill necessary to produce a modern equipment. In the present age of competition railroad companies find it to their advantage to provide fully and liberally for the comfort of passengers, but it is only during recent years that improvements have been so freely introduced that terminal stations rival the best hotels in comfortable and sanitary surroundings.

**A Transaction in Chapin Stock.**—In Common Pleas Court No. 3 at Pittsburgh Peter L. Kimberly of Sharon entered suit against Alexander M. Byers to recover \$97,510.11 with interest from August 1, 1899. According to a statement filed on August 8, 1897, the plaintiff was the owner of 2876 $\frac{1}{4}$  shares of stock of the Chapin Mining Company of Michigan, of the par value of \$25. The stock at the time was hypothecated to M. A. Hanna & Co. for amounts aggregating \$25,000. Kimberly states that he entered into a verbal agreement with the defendant whereby he received from Byers \$25,000 and in turn he, having secured the hypothecated stock from M. A. Hanna & Co., surrendered the same to the mining company, causing new certificates to be issued in Byers' name and gave them to Byers as security for the loans made. These certificates were forwarded to the defendant August 10, 1897. During the intervening time between then and August 1, 1899 the defendant received in dividends on the stock \$31,638.75. On August 1, 1899, the stock was sold with the consent of the defendant and transferred to the purchaser at the rate of \$118.75 a share, aggregating \$343,554.69, whereby the defendant, the plaintiff says, became liable to pay the plaintiff so much of the proceeds of the sale and the dividends thereon as would remain after deducting the indebtedness of the plaintiff to the defendant with interest. An appended statement shows the total indebtedness of the plaintiff to the defendant to be \$277,633.33.

**The Universal Machine Company.**—Z. R. Tucker, for a number of years employed as draftsman and designer by the Brown & Sharpe Mfg. Company and later associated with the Diamond Machine Company, Providence, advises us that he has purchased the drawings, patterns and special tools, together with all parts of machines in process, for the manufacture of the Universal grinding machines formerly made by Diamond Machine Company, and that he has fitted up a shop and organized a company for continuing the manufacture of same in Providence. The new concern will be known as the Universal Machine Company.

**The Pittsburgh Molders.**—Indications point to an early settlement of the molders' strike in the foundries at Pittsburgh, which was renewed again last week. A number of the larger foundries have settled with their men, among these being Taylor, Wailson & Co., Limited; Pittsburgh Mfg. Company, Totten & Hogg Iron & Steel Foundry Company, Porter Foundry & Machine Company and Thomas Carlin's Sons. It is expected that the balance of the foundries will arrange a settlement with their men this week.

The Nickel Corporation, Limited, have been formed in England to take over nickel mining property in New Caledonia, in the Mueo and Kone districts, for which £95,000 is to be paid in cash and £535,000 in cash or shares at the option of the new company. The London & Globe Finance Corporation, Limited, of London, of which Whitaker Wright is chairman, are offering for subscription £750,000 of the stock, of which £120,000 is to be appropriated for working capital. The concern do not appear to have any smelting plant and refinery, but the prospectus estimates profits on the basis of handling monthly 10,000 tons of 5 per cent. ore and selling the product, 6000 tons of nickel annually, at 20 cents per pound. The present total consumption of the world is estimated at 6000 tons.

At Pittsburgh the Union Boiler Tube Cleaner Company have filed bills in equity in the United States Circuit Court against Joseph Keenan and William G. Lindsay, Wilber D. Forsyth and E. T. Bell, all of Pittsburgh. The company claim to own a patent on a device for cleaning boilers and it is alleged the defendants are infringing on the patents.

## THE WEEK.

The Mexican Industrial Company have been formed in Mexico for the purpose of developing the iron and steel industry in that country, and, it is said, will erect an extensive plant at Chihuahua for the manufacture of billets and steel rails. The new company are closely allied with the Chihuahua & Pacific Railroad Company, who are building a railroad in Mexico.

Four thousand striking miners in the employ of the Susquehanna Coal Company of Wilkes-Barre, Pa., who had been idle since August 5, returned to work on December 1, a new wage scale satisfactory to both parties having been arranged at a conference between the company's officials and a committee of the strikers. It is estimated that the miners have lost \$402,000 in consequence of the prolonged strike.

Attorney-General Crow of Missouri has begun proceedings in the St. Louis Court of Appeals to have the National Lead Company excluded from doing business in the State, on the ground that they are a trust.

The Jackson & Sharp Company of Wilmington, Del., have been awarded the contract for 100 electric cars, which are intended for the roads now under construction in the grounds and vicinity of the Paris Exposition.

According to the *Deutsche Export Zeitung* of Berlin it is prohibited by the postal regulations of Brazil to mail in an ordinary or a registered letter treasury notes or bank notes, certified checks, coupons for dividends or interest, postage stamps, postage certificates, revenue stamps, or any other papers of value payable either on sight or to the bearer, no matter whether they be due or not. Infringements of this regulation will result in confiscation of one-fourth part of the inclosed value. It appears that the Brazilian postal authorities are applying the rule to both domestic and foreign mail.

The Mexican Government has sent a commission to the United States to select a location for a permanent exhibition of Mexican goods, which it is proposed to establish in this country with the view of fostering trade relations between the two countries.

It is reported that a project is on foot to form a combination among the manufacturers of certain lines of plumbing supplies. The former project in this line, which involved a capitalization of \$35,000,000, was abandoned, and the present effort involves a plan to organize a \$10,000,000 company. Francis J. Torrance, president of the Standard Mfg. Company of Pittsburgh, is said to be at the head of the new enterprise.

According to the *New York Journal of Commerce* the record of incorporations of large companies for the month of November showed a slight increase over the figures of the preceding month, the aggregate capitalization of new companies of \$1,000,000 or more authorized capital chartered last month being \$340,000,000, as compared with \$323,000,000 in October, \$193,000,000 in September and \$252,000,000 in August.

The fire loss of the United States and Canada for the month of November, as compiled by the *New York Journal of Commerce*, shows a total of \$11,857,650, which is some \$200,000 less than that of the preceding month, but \$1,620,000 above the loss for November, 1898, and \$4,700,000 greater than that of November, 1897. The total fire loss for the 11 months ended November 30, 1899, amounts to \$123,512,000, or about \$16,500,000 ahead of the same period of 1898 and \$24,500,000 greater than in the first 11 months of 1897. Altogether the 1899 fire loss will be a serious matter for the fire underwriters, and will mean unsatisfactory annual statements for the insurance companies.

**Pennsylvania Engineering Works**—It will be recalled that the Pennsylvania Engineering Works, New Castle, Pa., have recently taken over the entire business interests of the New Castle Engineering Works, whose boiler, foundry and machine shops are located at New Castle, Pa. The Pennsylvania Engineering Works announce that they are now ready to quote prices for prompt delivery on all kinds of material and castings, also wrought iron shell work of any description in connection with blast furnace, steel works and rolling mills.

A company just organized at Santander, Spain, will, it is reported, erect a large pig iron manufacturing plant. The concern, who have a capital of \$1,600,000, will be known as the Sociedad del Hierro y del Acero Nueva Montanesa.

The Colorado Southern Railway Company have decided to build large shops at Denver. It is stated that they will be fitted to turn out anything needed in railroad equipment from a box car to a locomotive.

# The Iron Age

New York, Thursday, December 7, 1899.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	PUBLISHERS.
CHARLES KIRCHHOFF,	-	-	-	-	-	EDITOR.
GEO. W. COPE,	-	-	-	-	-	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	-	-	-	-	-	HARDWARE EDITOR.
JOHN S. KING,	-	-	-	-	-	BUSINESS MANAGER.

## Currency Reform Proposals.

The country now has before it the currency proposals of the Administration and of the Administration party in each branch of Congress. They are in accord, and all equally explicit, as to the maintenance of the gold standard, first, by legal affirmation, and, second, by providing the Secretary of the Treasury with the means of maintaining the reserve. Neither Senate nor House bill deprives the silver dollars of their legal tender quality; the House bill distinctly reserves this. But both bills provide that the gold dollar shall be the unit or standard of value, and they provide either for the payment of all Government obligations in gold, or for the redemption of United States and Treasury notes in gold and the maintenance of all United States currency at par in gold.

Both bills provide for increasing the reserve, the House bill by a very small amount, and the Senate bill to \$150,000,000, and, which is of very much more importance, for the preservation of the reserve by exchanging redeemed notes with gold in the general funds of the Treasury and by the sale of bonds. Secretary Carlisle had to sell bonds under authority of the resumption act; he was under no statutory obligation to do this, and his right to do it was denied by the cheap money men. It is proposed to direct the Secretary to replenish the reserve when it is depleted, and to authorize for this purpose the sale of bonds that can be disposed of at a better advantage than the bonds provided for in the resumption act.

In different terms, and with some substantial differences as to incidental features, both bills will remove all room for pretense that the silver dollar is a standard; it will remain a legal tender, and so will the greenback, but both are to be maintained at par in gold dollars. Both measures provide adequate means for replenishing the gold reserve, and they do not leave it optional with the Secretary of the Treasury to replenish the reserve or to redeem United States or Treasury notes in gold. Either bill, therefore, would save the country from the harm that might be done by a Secretary who sympathized with the cheap money, or free silver, interest, or who was timid about using the means to preserve the gold standard.

As to the bank currency, the President recommends nothing except that as it does not expand with the growth of population and business Congress consider what ought to be done about it. The Senate and House bills propose to allow the banks to issue notes to the face value of the bonds deposited as security, and both propose to reduce the tax on circulation, the House bill transferring the tax to the capital and surplus, and the Senate bill simply reducing the amount by one-half. These measures are not adequate, but they are something, and it has long been evident that they were as much as could be got from Congress at this time. Either bill will eliminate bimetalism from the theory of our currency system, will compel the maintenance of the single gold standard, and will encourage a moderate expansion in the bank currency.

The Senate bill also assumes that the holders of bonds

that will mature in from five to nine years would be glad to exchange them for bonds to run thirty years, even at a lower rate of interest, and authorizes the refunding of about \$850,000,000 of 3, 4 and 5 per cent. bonds for 2 per cent. 30-year bonds. The outstanding bonds are at premiums which make the actual earning on the investment very much less than the nominal rate of interest, and the Government may pay them off at their face value in 1904, 1907 and 1908.

## Is the Price of Structural Steel Checking Building?

There has been a good deal of clamor in the newspapers about the alleged injury which high prices for steel and materials generally were doing to the building industry. Numerous instances have been cited of the abandonment of projected undertakings on account of advanced cost. It is probable that there have been many such cases, but it is only fair to state that really, after all, the advance in materials has not so enormously increased cost as many have been led to believe, and it is an open question whether other more potent influences are not more than offsetting what effect is undoubtedly produced in some directions. First of all it needs only mention of the fact to bring conviction that the demand for steel for industrial structures, for shops, plants, power houses, &c., has been enormous, and is going on at an extraordinary rate. The additions to old enterprises and the construction of new manufacturing and municipal plants in this country have shown no signs of falling off. The volume of new business in this direction is certainly large enough to more than counterbalance any decline in the consumption for small incidental buildings, in which every item of cost must be closely scrutinized in order to keep the total within predetermined limits.

It has been claimed—and these claims seem plausible—that the high cost of steel must very seriously affect, adversely, the consumption of materials in that class of structures which may be designated as the modern skyscraper. To begin with, it may be stated that the experience in such cities as New York and Philadelphia, with the amount of work constantly coming up in architects' offices, does not bear out the fears expressed. The fact is that the cost of the steel entering into large modern office or dwelling structures is popularly much overestimated. In an interview in the *New York Times*, J. Hollis Wells gives an instance which illustrates the situation well. A year since his firm put up a building, the cost of which figured down to about 32 cents per cubic foot. He is now planning a structure almost exactly similar in size and construction, which at present prices will cost only 2.2 cents per cubic foot more.

Another authority, George Hill, a member of the American Society of Civil Engineers, states that the value of steel in fire proof apartments varies from 8 to 12 per cent. of the total cost of the building, in office buildings, from 8 to 15 per cent., and in commercial buildings from 10 to 15 per cent. Mr. Hill argues that since the cost of the building is from one to two times the cost of the lot, therefore the cost of the steel is in no case likely to exceed  $7\frac{1}{2}$  per cent. of the total investment. In many instances, of course, it is very much less.

These data explain to some extent the fact to which we have alluded—that the amount of work coming up in such important markets like that of New York continues very large, and that while the advance in the cost of material must have its effect, it is not by any means as far reaching and as general as many profess to believe.



### Railroads and the Iron Trade.

The impression was quite widespread a few years since that the iron trade was destined to suffer a serious diminution in the railroad demand. The substitution of rails of heavy sections for only partly worn rails of lighter weight, the adoption of freight cars of greater capacity and better construction, the general improvement in bridges, and in short the general progress made in every direction toward greater durability and improved maintenance led thoughtful observers to believe that the time was near at hand when the annual requirements of the leading systems and of many of the smaller roads would be so limited as to seriously affect the consumption of iron and steel. During the late depression it was quite a common occurrence to have this feature of railroad progress trotted out as one of the reasons for the dullness of trade. The growth of railroad traffic, it was alleged, had been fully provided for well into the future by all companies having good financial resources. Another era of new railroad construction, to be brought about by the development of sparsely settled localities, having limited transportation facilities, was regarded as needful for any considerable expansion of the railroad demand for iron and steel.

These views have been totally disproved by the development of the past two years. Not a single railroad system, taking even the most progressive and enterprising, has been able with all its improvements to meet the requirements of its traffic. Every one has fallen short in some respect, while important lines have proved deficient in a number of essential particulars for rendering satisfactory service. The larger the system the bigger have been the orders for rails, for locomotives, for cars and other supplies. More sidings have been needed, more yard room has been demanded, greater terminal facilities have been required, everything of the kind involving the consumption of iron and steel. And the quantities thus required per unit of construction have far exceeded anything before known, because of the greater weight called for by modern construction to secure increased durability. A larger tonnage of iron and steel is going into equipment than ever before, not only through the introduction of steel freight cars, but also by reason of the use of larger locomotives and cars. Improvement is the order of the day in making additions to equipment, and not merely the duplication of previously existing facilities.

The railroad demand may be stagnant for a time, as railroad business suffers in common with other branches of trade when depression prevails, but a revival is bound to come when the country is prosperous. No railroad is ever finished. The best railroad management in the world will never be able to so build or so equip as to regard the system complete for all requirements. Some managers may see further into the future than others and make better provision for the growth of trade, but time and again has the fact been demonstrated that apparently permanent improvements have proved to be but temporary by the progress of events and wholly unanticipated developments in trade, discoveries in science or revolutions in mechanics. Those who are at this time inclined to again wag their heads and speak despondently of the future, fearing the complete subsidence of the railroad demand, should take counsel from what has happened in the recent past. They have reason for hope rather than fear.

The National Association of Credit Men have devised a method of strengthening one of the weak points in the national bankruptcy law. At a special meeting of the

Board of Directors, held in Chicago last week, it was decided to raise a fund of \$10,000 for the purpose of prosecuting those who make fraudulent assignments. This is better than waiting for Congress to amend the law in the hope that all loop holes will then be stopped up and rascally practices checked by the wording of the statute. One or two successful prosecutions, conducted with the backing of the Credit Men's Association, will inspire a wholesome fear of the law as it now stands.

### The Activity in Lake Ore Mining.

Now that the season of navigation has practically closed and ore prices for the coming year have been agreed upon, it will be interesting to make a few advance speculations on the coming year's mining situation. In the first place the advance of ore prices to a point within 30 cents of double that fixed at the commencement of sales for 1899 will give a further impetus, if any such were needed, to the movement of consumers for the control of their own ore supplies. While the cost of mining ores will advance but little from that now prevailing, and less than is generally supposed from what was the cost a year ago, the price of ore to the furnace not controlling its sources of supply is pretty near twice as much as it was then. The advantage that 1900 will give the steel maker who goes back to the ore is, therefore, materially increased. The same statement is true as regards lake transportation of ore. Vessel rates at \$1.25, as against an actual cost of 40 or 50 cents, more or less, is an argument that affords not a little food for reflection.

But the advance in values of ore will have a very stimulating influence on the owner of undeveloped ore lands, and the price for these to those consumers who may still enter the market for ore property cannot long remain the same as it has been. Ore in the ground has been this summer advancing till it has reached a price of, perhaps, from 10 to 18 cents a ton on fee lands, though miners will for obvious reasons pay considerably more than that for royalties. When all charges against ore on delivery at Lake Erie docks average, say, from \$2 to \$2.50, under the selling price there, it will be strange if its basic value does not rise above that prevailing under former conditions.

Perhaps lake and rail shipments of the now closing year will reach the sum of 18,000,000 tons. There was little ore on lake docks last May, and should melting go on during the winter at about the rate of the past few weeks there will be little next spring. It has been stated that furnaces to make close to 5,000,000 tons of metal a year are now under construction, or are planned for an early start. Most of these are for lake ores, and that portion of them will add at the rate of 7,000,000 tons to the present rate of annual consumption of ore from Lake Superior mines by the time we enter the year 1901. In other words, there will have to be on lower lakes next fall a supply of ore to keep furnaces going through the winter that will require an annual supply of close to 22,000,000 tons. Of course many of these will not be in operation till late in the year, but the figures are not without their suggestion. Perhaps the total may be increased, for it is a well known fact that while assays on Mesaba shipments seldom run as low as 60 per cent., it is a rare ore from that range that will show that much in furnace results.

Some time ago it was estimated that vessel capacity for moving 18,000,000 tons from upper lake docks had been secured by ore interests, and it has been stated that not more than this would or could be mined or shipped. But these interests are still in the market for vessel



room, and that 18,000,000 tons has been very materially increased to date at the same rate as was paid for the early bulk of it. This is an indication of what these interests figure on in the way of movement for the coming year.

All over the mining districts preparations for stockpiling, stripping and making ready for another year are in progress on a scale never before dreamed of. Enormous contracts for earthwork have been let, in the case of two Mesaba mines alone amounting to nearly 3,000,000 cubic yards, and many shafts will be sunk on all ranges at once. There have been two mines in Minnesota reaching a product of 1,000,000 tons this year, and two in Michigan. Next year there may be five in Minnesota and four or five in Michigan.

Improvements to railroads, both in the upper lake region and from lower lakes to furnaces, are such as to give confidence that their ore handling capacity can be increased an average of 15 per cent. Betterments to docks and equipments are such as to assure a dispatch that will increase the seasonal capacity of the fleet more than that percentage.

The season has passed without labor trouble. It would seem as if the crucial period had passed for the present and that no serious difficulties ought to be met for some time. Old mines are ready for a larger output, new mines are wheeling into line, new equipment and facilities will be ready, all to give the iron industry such a supply of raw material as was not dreamed of ten years ago.

## CORRESPONDENCE.

### The Steel Plant of the Tennessee Company.

*To the Editor:* The steel plant of the Tennessee Coal, Iron & Railroad Company, at Ensley, made its first ingots on Thanksgiving Day. Only three of the furnaces are in operation, while the billet mill will probably be started within a week or ten days. The enterprise has been greatly delayed, owing to the tardiness of the contractors for machinery. When it is stated that some parts of the work which called for delivery in July were delivered in November enough is said to explain the nature of the difficulties which the Tennessee Company have had to encounter. However, the first ingots were extremely satisfactory. The analysis of the first steel made is:

Carbon.....	0.13
Manganese.....	0.41
Sulphur.....	0.013
Phosphorus.....	0.02

At Ensley, the Tennessee Coal, Iron & Railroad Company are pushing to completion the fifth furnace stack. This stack is thoroughly equipped with boilers and engines, connection being made, of course, with the other battery of four stacks, so that they are increasing their furnace capacity to meet the demands of the steel plant, and at the same time to not be obliged to curtail their iron trade.

Ensley at the present time is one of the busiest spots in America. It is an interesting exposition of the resources of the Birmingham district to stand, as the writer did the other day, with N. Baxter, president of the Tennessee Coal, Iron & Railroad Company, at the main entrance of the steel plant and to see in the immediate foreground five modern iron furnaces, less than  $\frac{1}{4}$  mile beyond the opening of the Pratt coal mines; in the distance Red Mountain, with its inexhaustible supply of ore, while in the immediate foreground are limestone quarries and the by-product coke ovens. Everything that is needed for the making of iron and steel is there in such easy compass that the raw materials can all be switched to the works at a minimum cost. This is an old story, but the re-awakening of industrial activity in the South is a new story. Great and important developments may be expected there during the next three or four months.

MATTHEW ADDY & CO.,

JAMES A. GREEN.

CINCINNATI, OHIO, December 2, 1899.

It is reported that the Pennsylvania Railroad will soon place an order for 1500 cars of 100,000 pounds capacity each with the Pressed Steel Car Company of Pittsburgh. The same road is expected to place an order in a few days with Baldwin Locomotive Works of Philadelphia for 20 class H-4 consolidated engines.

## OBITUARY.

RICHARD BOYSE OSBORNE.

Richard Boyse Osborne, a prominent engineer of the older generation, died on November 28 at Glenside, Pa., at the age of 84 years. He was born in London, England, and in 1834 went to Canada. In 1836 he entered the service of the Philadelphia & Reading Railroad as a draftsman, rising with rapidity to the position of chief engineer, which he held until 1845, when he went to Ireland to take up an important engineering position in that country. He designed and put up the first Howe truss roof and the first Howe truss bridges in Great Britain and in this country. Returning home in 1852 Mr. Osborne took charge of the work of laying out the Camden & Atlantic Railroad and of Atlantic City, N. J., to which he gave its name. He was also prominently connected with many other important engineering works and was known as an inventor and an author of engineering works.

JOHN I. BLAIR.

John Insley Blair, the famous railroad builder and one of the wealthiest men in the United States, died on December 2 at his home at Blairstown, N. J., at the patriarchal age of 98 years. He was born near Belvidere, N. J., one of a family of 11 children, and at a very early age started in life for himself, when 17 years old becoming the proprietor of a general store. He rapidly extended his business and opened stores in a number of New Jersey towns. In 1839 he undertook the building of a railroad from Oswego, N. Y., to Ithaca, to furnish an outlet for the product of the iron mines at Scranton, Pa., which road has since developed into the Delaware, Lackawanna & Western system. Subsequently Mr. Blair built about 30 railroads and received in connection with this work some enormous grants of public lands. He founded the New York banking firm of Blair & Co., with which he was connected up to the time of his death.

ALEXANDER M. GUTHRIE.

Alexander Murray Guthrie of Pittsburgh died last week at the Presbyterian Hospital in New York of typhoid fever. He was born in Pittsburgh March 28, 1842, and was the son of John B. Guthrie. He was a graduate of Jefferson College and pursued the study of law for a short time after leaving college. For two years he was fleet secretary of the North Pacific fleet under his uncle, Admiral Murray, and was for several years teller of the National Bank of Pittsburgh, afterward becoming interested in the iron business with Hussey, Howe & Co., acting as their New York representative. Mr. Guthrie was interested in the firm of A. M. Guthrie, Limited, crucible manufacturers at Pittsburgh, whose plant was recently purchased by the Allegheny Valley Railway. He was largely interested in various financial institutions and was a director of the Exchange National Bank.

CHARLES POTTER.

Charles Potter, the founder of the Potter Printing Press Company and the originator of the printing presses that bear his name, was born in Brookfield, Madison County, N. Y., in 1824 and was the eldest child of Charles and Eliza (Burdick) Potter. In 1837 his father, being obliged to retire from his trade of carriage building on account of ill health, engaged in farming in Adams, Jefferson County, N. Y. In the autumn of 1846 he removed to Westerly, R. I., where he made his home for a number of years. It had been Mr. Potter's intention and also the desire of his father to take a course in agricultural chemistry at Yale and fit himself for scientific farming, but circumstances compelled him to do otherwise. From the spring of 1847 to September of 1849 he was engaged as a clerk in a lumber and building business in Westerly, R. I. Here he displayed so much business ability that when a stock company was formed to take up a defunct iron foundry business Mr. Potter was engaged to have entire charge of the financial as well as the commercial part of it. In this he was engaged until January, 1855. In 1854 the late George H. Babcock of the firm of Babcock & Wilcox Company had with his father invented a printing press for printing in three colors at once. This was of small size, only 8 x 10 inches, and run by foot power. Mr. Potter made an arrangement with the Babcocks, father and son, to take this invention, have the presses built at his own expense and put them on the market, or sell the patent and after all expenses were paid divide the profits equally. He therefore left the foundry business with a cash capital in his pocket of \$250 and early in the winter of 1855 took the press to New York and opened an office at 29 Beekman street, second floor, over Connor's type foundry. While endeavoring to sell these presses another of decidedly original character, invented by Merwin Davis of Brooklyn, was offered him on the same conditions as that of Mr. Babcock's. In 1857 Mr. Babcock obtained a patent for a very unique and excellent job press and Mr. Potter took hold of that on the

same plan. This became a popular press and many were sold, but after it had been in the market about two years and had gained great favor a competing builder obtained a patent and threatened infringement proceedings in the courts. In view of these conditions Mr. Potter sold out the presses he had in stock and retired from that part of the business rather than risk his capital in patent litigation. In the meantime it was found that the color press which first engaged Mr. Potter's attention in 1855 was about 40 years ahead of the times, those then built printing sheets 12 x 19 inches and selling for about \$1000 and printing in three colors; and yet in 1895, 40 years from that time, he built and sold a press of his own invention that would print a seven-column newspaper of from 4 to 16 pages, in four colors, at the rate of 24,000 copies per hour, folded and delivered in packages of 50. Mr. Potter built his first cylinder press in 1857, making the drawings and a large part of the patterns himself, and he continued to design his own presses until the rapidly increasing demands for his machinery compelled him to devote his time to the financial and general mechanical operations of the business, to which he has ever since given personal direction. After making his first cylinder press, with his illustrated circulars in his pocket he canvassed for its sale and on getting orders came back and built his presses, and then went out and erected and set them in motion. This he did for many years. Mr. Potter's presses were built mainly in Westerly, R. I., until 1865; thereafter, until 1879, they were built at Norwich, Conn. In 1865, the business having grown too great to be managed by himself alone, he formed a partnership with J. F. Hubbard and the firm were changed to C. Potter, Jr., & Co. In 1879 after a pleasant partnership of 14 years Mr. Hubbard's health failed and he retired from the firm. Mr. Potter then built his shops in Plainfield, N. J. After the retirement of Mr. Hubbard from the firm Mr. Potter admitted to a share in the business H. W. Fish and J. M. Titsworth, and a little later D. E. Titsworth, all of whom had been long in his employ. Mr. Potter added to the class of presses that he had built the varieties of two-revolution, lithograph, drum cylinder and web presses. In 1893 the company were changed from a private company to a corporation with the same powers as before, Mr. Potter being the president of the company. Mr. Potter has never allowed himself to be tempted from his one special business of manufacturing printing presses, however strong the temptation might be.

### Important Carnegie Changes.

At the regular meeting of the Carnegie Steel Company, Limited, held in Pittsburgh, on Tuesday, December 5, at which Andrew Carnegie was present, H. C. Frick tendered his resignation as chairman of the Board of Directors and retired from the board. He remains as consulting partner without salary, occupying the same position as Andrew Carnegie, Henry Phipps and Wm. H. Singer. The official announcement issued by the Carnegie Steel Company is as follows:

"At a meeting of the Carnegie Steel Company, Limited, to-day, Mr. Frick informed his partners of his desire to give up the duties of chairman of the Board of Managers, and asked to be relieved in order to join Mr. Carnegie, Mr. Phipps and Mr. Singer as consulting partners of the company. Mr. Frick's partners assented to his request. A successor to Mr. Frick was not chosen, as it is intended to abolish the office of chairman, since Mr. Frick leaves it. Mr. Curry, who has been long confined by illness, sent in his resignation as a member of the board, which his partners were forced to accept with great reluctance. George Lauder and A. M. Moreland were unanimously elected to fill the vacancies."

These changes went into effect at once. George Lauder, who becomes a member of the Board of Directors, has not been in active business for some time, but will hereafter take a more active part in the affairs of the Carnegie Steel Company, Limited. A. M. Moreland, who is also made a member of the board, is auditor of the company. Henry M. Curry, who retires on account of ill health, has spent much of his time for the last few years in California, and has not given active attention to business for some time.

### The Duquesne Steel Foundry Company.

We have already referred in these columns to the fact that the Duquesne Steel Foundry Company of Pittsburgh have made application for a charter of incorporation. The parties identified with the new concern are W. A. Shaw, J. L. Lewis, both formerly of the Lewis Foundry & Machine Company of Pittsburgh; Edward Kneeland of the Frank Kneeland Machine Company of Pittsburgh, Thomas Rodd of the Pennsylvania Railroad, A. W. Herron, Fred Gwinner and T. H. Bakewell. The concern have not as

yet selected a site for their new plant, having several favorable locations under consideration. Contracts for nearly the entire plant have been placed. The initial plant will consist of two 20-ton acid open hearth furnaces, electric cranes and everything necessary for a modern steel foundry. The buildings will be of steel frame construction and as nearly fire proof as it is possible to have them. Machinery and cranes will be electrically driven and electricity will be used in place of steam throughout. The output will consist of steel castings from the smallest up to the largest size. The concern will be large manufacturers of steel rolls of all kinds.

## The American Society of Mechanical Engineers.

### ANNUAL CONVENTION.

The convention of the American Society of Mechanical Engineers was opened last Tuesday evening at the house of the society, 12 West Thirty-first street, New York. The address of the retiring president, Geo. W. Melville, Chief Engineer United States Navy, was in part as follows, the title being

#### Engineering in the United States.

Every American is naturally proud of the fact that the first successful steam vessel was the work of an American engineer; but it is not so generally known that the first steam war vessel of any navy was designed by the same American (Robert Fulton) and was built in this very city in 1814. Had the war with England lasted a little longer there can be no doubt that the "Demologos" would have created a revolution in naval architecture; but the close of the war before she was completed rendered her active service unnecessary, and she was finally destroyed by an explosion of her magazine in 1829. The advent of the "Demologos" did not create an engineer corps, nor bring any engineers into the navy, so that the real beginning of naval engineering was when the steamer "Fulton" was built, and in 1836 Charles H. Haswell, the Nestor of engineering in this country, became the first chief engineer in our navy. The "Fulton" was a small vessel of only 1200 tons displacement, or about what would now be considered a small gunboat; but she was the beginning of what has brought about as great a change in navies as the invention of gunpowder did in warfare.

Without going into a detailed sketch of the work done by Mr. Haswell, it may not be amiss to recall to your minds a famous old ship, the machinery for which was designed by Mr. Haswell, who, indeed, made all the drawings for it himself. This vessel was the "Powhatan," which for many years was one of the finest of our old ships, and rendered most efficient service. Probably every member of this society living near our Eastern coast has seen this fine old ship. She was built in 1847, and remained in active service for 40 years, a monument to those who had designed and built her.

Some years before our Civil War another great marine engineer began to attract attention—Benjamin F. Isherwood. He entered the navy in 1844, so that he is really a contemporary of Mr. Haswell. It is perhaps not exaggerating to say that he is the most brilliant marine engineer whom this country has seen, and his work has made his name known among marine engineers in all parts of the world. His fame will probably rest mainly on his record as an experimentalist, in which field there are few who have ever exceeded him, either in the amount or the excellence of the work done.

The most notable of his experiments was the series which gave the complete demonstration of the relation between cylinder condensation and the rate of expansion. Until these experiments, most engineers believed that the law of Mariotte, that the product of pressure and volume is constant, was strictly applicable to steam as well as to permanent gases, and that a very large ratio of expansion with low pressures of steam would be profitable. Isherwood's experiments on the "Michigan" demonstrated conclusively that under the conditions there obtaining, of a slow moving engine and a low steam pressure, a ratio of expansion was soon reached beyond which any increase would cause an absolute diminution of economy, instead of an increase thereof, as would have been predicted from a strict adherence to Mariotte's law. Every young engineer knows this thoroughly to-day, and is cautioned about it in his text-books; but so far from its being readily accepted when Isherwood's experiments had demonstrated the true facts, many will remember that he was assailed in the public prints as being guilty either of hopeless ignorance or wilful waste of the Government money.

Mr. Isherwood was not only a splendid experimentalist, but a designer of the first rank, and an executive engineer who has not been surpassed. He was Engineer-



in-Chief of the navy during the whole of the War of the Rebellion, and during that time was responsible for a large number of designs. Here again he was criticised from the academic point of view, and yet the very faults for which he is criticised only appear, on proper analysis, the more praiseworthy as excellent details of sound designing. He was accused of building engines which were inordinately heavy, which accusation he has never denied. To the mere office engineer this was true, but he realized what they did not, that these engines had to go into the hands of men who were largely untrained and unfamiliar with machinery. The ordinary formulae for design assume reasonably decent handling, and do not provide for the stresses due to ignorance and carelessness. Isherwood knew that the point of first importance was to build engines which would not break down, and, in fact, could not be injured by ignorant and careless handling. The result of this policy was engines very much heavier than would ordinarily be built; but they did not break down, and they carried our ships to victory. To my mind this was the highest proof of his talent as a sound designer. He had the courage to invite criticism from the book engineer in order that he might insure success for the country.

#### EARLY VESSELS OF THE NAVY.

You all know the story of the "Alabama," and how she and her sister commerce destroyers drove our merchant marine off the ocean. The Navy Department felt it important to get a class of vessels that would be faster than the "Alabama," or any other vessel likely to be built, so that they could sweep the seas of all these commerce destroyers. A number of designers were concerned in projecting both hulls and engines to accomplish this result, but although the great Ericsson was one of his rivals, Isherwood's ships were the only ones which really accomplished what was intended. The "Wampanoag" was the first of Isherwood's ships to be tried, and she was a magnificent success in every way—really in many ways the greatest success as a steam war vessel that the world has ever known, because she distanced everything that had preceded her so much more than has ever been accomplished before or since. The "Wampanoag" was given a trial lasting 37½ consecutive hours between Sandy Hook and Cape Hatteras, and for the whole run averaged nearly 17 knots per hour. During several six-hour periods her speed was over 17 knots, and for several single hours she made over 17½. It should be noted also that this was not a smooth weather run, as the trial was ended prematurely owing to a gale, and for some time previous the weather was heavy. The speed made by the "Wampanoag" was at least 4 knots more than that of any other ship—either mercantile or naval—of her period, and, in fact, it remained the record speed for many years. Even the first fast cruisers of modern navies, like the "Esmeralda" and "Naniwa," while nominally credited with a higher speed, only made it over the measured mile, or for a short spurt, while the "Wampanoag's" record was, as stated, for more than 37 hours. Another of the Isherwood ships, the "Ammonoosuc," was given only a short trial, but showed qualities equal to those of the "Wampanoag." The best of the rival ships made a speed of about 15 knots for less than an hour, and the other vessels fell below the "Wampanoag" even more than this.

It is not perhaps generally known that in calling the "Wampanoag" an "Isherwood" ship the designation is more inclusive than might be supposed at first glance, for Mr. Isherwood was responsible for those features of the hull design which affect speed. The design of the hull as a whole was worked out by Naval Constructor Delano, an accomplished naval architect, but he simply took the form of hull as designed by Mr. Isherwood and worked out the structural details necessary to carry out his ideas.

The first president of this society (Dr. Thurston), as well as the second (Dr. Leavitt), were naval engineers, and so was that other able man, Charles E. Emery, now gone to his long rest. William Everett, who became famous in connection with the laying of the first Atlantic cable, was another, and so was George Westinghouse, whose wonderful achievements, both as an inventor and as the creator of great industrial works entitle him to be called the Napoleon of industrial engineering. Theodore Cooper, the great bridge engineer, and Lay, the inventor of the automobile torpedo, were naval engineers during the war. We must also call attention in passing to Chief Engineers Alban C. Stimers and Isaac Newton, who brought the original "Monitor" down to Hampton Roads and enabled her to whip the "Merrimac." But for their ability and indefatigable labors the results would have been very different. We might also recite case after case of gallantry and daring where vessels were saved by the skill of the engineers; where they lost their lives through attention to duty, or where they distinguished themselves specially in other ways, but time will not permit us to dwell upon these features.

During all the period which we have thus far considered, the engineers for the navy had obtained their education outside of naval influence; but in 1866 a class of young men was ordered to the Naval Academy to be trained as engineers in a naval atmosphere. A number of these gentlemen are still in the service, and were chief engineers of our large vessels during the recent war with Spain. In 1871 engineer cadets were appointed for the Naval Academy, the course being for two years only, until in 1874 a class was appointed, whose course was to be for four years.

It is probably safe to say that the young men graduated from the Naval Academy under the cadet engineering system presented a higher average ability than any equal number of young men from any of our great technical schools; indeed, so great was their ability that the service was unable to retain them, but the country has profited from the training they received by their work in civil life. A number are filling positions as professors of mechanical engineering in our leading colleges; a number are consulting engineers of the highest rank, and several are engaged in the management of our large manufacturing enterprises—one (who is a vice-president of this society) being the general manager of one of the largest electric companies in the world.

#### THE NEW NAVY.

Curiously enough, just about the time when Congress was undoing the splendid engineering work at the Naval Academy, the Navy Department itself was formulating plans for vessels which should be designed along lines so different from those which had preceded that the familiar epithet applied to them—the "new navy"—is entirely appropriate. The labors of the first Advisory Board made available a mass of information, as a result of which Congress in 1883 authorized the building of the four Roach cruisers, which were the beginning of the new navy. These vessels, I may say in passing, although possessing few features of novelty, as far as marine engineering in general is concerned, were nevertheless a marked change from the old wooden ships which had preceded them, and they rendered very valuable service, and are still, with modernized machinery, very satisfactory and useful vessels.

In 1885, when Mr. Whitney became Secretary of the Navy, there was inaugurated a period of great activity and progress in the Navy Department, taking what had been done by Secretary Chandler, who started the new navy, and carrying on the work along the lines of logical development. Mr. Whitney's determination was to have ships which should be fully the equals of those in any country, and it was through him that the speaker was called to the position of Engineer-in-Chief of the Navy in 1887, succeeding his life-long friend, Commodore Loring, one of our past presidents, whose reputation as an engineer is too well known to all of you to need any praise from me.

One of the first things we did was to establish the use of water tube boilers and light compound engines for our steam launches. Private builders in this country had used water tube boilers, but the results, owing to the type of boiler employed, were not altogether fortunate.

#### WATER TUBE BOILERS.

We found a boiler which has proved entirely satisfactory, and also developed light machinery which was also sufficiently substantial to stand the comparatively rough handling with which the machinery of small boats must inevitably meet. We are to-day the only navy which uses water tube boilers exclusively in its small boats. When we started the effort was made to save as much water as possible, and small blowers run at a high speed were used for draft, but the inevitable hum caused so many objections to be entered by officers of high rank that we were driven to the use of the steam jet. It was, of course, important that the most economical form of jet should be used, but when we came to determine this question we found that there were absolutely no reliable data in existence. As a result, we carried out a valuable series of experiments at the New York Navy Yard, and found an exceedingly simple form of jet, which was also very economical, giving us a fairly high rate of combustion for a comparatively small expenditure of steam.

It was evident to us that with the prevailing tendency toward continual increase of speed and power, with the accompanying increase of steam pressure, the shell boiler would at some near date have to be superseded by the much lighter water tube boiler, and we therefore invited a competition among the various manufacturers of water tube boilers, with a view to determining the one which, all things considered, would be best adapted to naval uses. Although this competition occurred about ten years ago, you are doubtless familiar with the circumstances, and that, as a result, we installed about 5000 horse-power of Ward boilers in the coast defense vessel "Monterey," this being at the time, and for sev-



eral years, the largest installation of water tube boilers in any naval vessel. I am glad to say that these boilers have always given satisfaction, and are still in use. At this same time water tube boilers of a different type were installed on one of our torpedo boats, and we have never used any other than water tube boilers on any of the numerous torpedo vessels which have been built since.

#### TRIPLE SCREWS.

One of the notable improvements in design which we introduced for large vessels was the use of triple instead of twin screws. We were not the originators of this method, as small vessels in both France and Italy had demonstrated its success, and both France and Germany were building vessels of about 12,000 horse-power with this system of propulsion. When it came to the design of the "Columbia," the first of our commerce destroyers, with 21,000 horse-power, I was satisfied, after careful study of the problem, that we would need to use triple screws to attain success. At the beginning I did not anticipate an economy in propulsion, and the adoption of triple screws was for structural reasons; but when the "Columbia's" trial occurred we found that there was a material increase in the propulsive efficiency. When the "Minneapolis" was tried shortly afterward with the same system of machinery, this fact of greater economy was again established, so that we now feel that triple screws are justified not only for numerous other reasons, but on the ground of economy. This arrangement of propellers has become very popular in a number of foreign navies, which have followed it out on a considerable scale, and have built all their large vessels with triple screws. It is probable that we shall do the same thing in our larger ships of the new programme.

#### REPAIRING AND DISTILLING SHIPS.

During our late war with Spain we developed and utilized two engineering schemes which had never previously been tried in actual service—a repair ship and a distilling ship. The former is one phase of the modern method of treating large work by taking the tool to the work instead of bringing the work to the tool. The "Vulcan" was the equal of anything, except a very large repair yard, and after the battle of Santiago she was almost invaluable in the much needed general overhaul of all the ships. Besides an admirable outfit of machine tools and engineering stores, the "Vulcan" was specially notable for using the first cupola ever installed on board ship. The distilling ship was fitted with a four-unit, triple effect distilling apparatus capable of furnishing 50,000 gallons of fresh water per diem after use for some time, with an economy of over 20 pounds of water per pound of coal burned under the boilers. With clean coils the "Iris" actually furnished over 100,000 gallons per diem. The bunker capacity is 3000 tons of coal, thus giving a potential capacity of distilled water of 60,000 tons, or as much as 12 of the largest tank steamers. The advantages of a distilling ship over a "tanker" are very numerous and obvious.

#### THE "OREGON."

The war with Spain was too short to give a chance for great experience in any line, but the work of the "Oregon" stands out as a brilliant illustration of the fact that the modern battle ship is not only the creature of the engineer, but is absolutely dependent upon him for success. You all know the story of Milligan's work as the chief engineer of the "Oregon;" of his ceaseless vigilance to keep everything in order and prevent any deterioration; of how he saved the good coal for the day of battle which finally came (though he was told it never could come), and, above all, how he persuaded Clark, the commanding officer, to have all the boilers ready all the time, although others had steam on only half the boilers and, where it could be done, half the engine power was laid off. I am firmly convinced that the brilliancy of the victory at Santiago is largely due to Milligan's skill and foresight, and, as I said, this case is direct proof that however admirable as a great fighting machine, the battle ship is useless, except in the hands of trained engineers.

#### PROGRESS IN NAVAL ENGINEERING.

During the last 15 years naval engineering has shared in the general progress of all marine engineering, and has led in many respects. Wrought iron, which was formerly the mainstay of the designer, has practically disappeared, to be succeeded by mild steel, which is not only stronger, but much more reliable, and the manufacture and inspection of which have been brought almost to perfection.

In the engine there has been a better disposition of the material; and the use of hollow instead of solid shafting and other large pieces of forged material, the use of steel castings, &c., has been instrumental in enabling the use of higher pressures, and particularly of higher rotative speeds. These rotative speeds have become pos-

sible since we have learned to design the propellers on rational principles.

In the boilers the reduction of weight has been due, apart from the more recent adoption of the water tube type, to improved material, and especially to forced draft. This, as you are doubtless aware, is an American invention almost contemporaneous with Fulton's early steamers; but it had almost disappeared, and after a brief revival under Isherwood during the Civil War, had again died out until it was taken up in some of the foreign navies. At the present time no naval machinery is ever designed without the use of forced draft.

Pressures have been gradually rising, and even with shell boilers as high a pressure as 200 pounds has been employed; but with the present plans of using 250 pounds at the engine, with either triple or quadruple expansion, and some 25 or 50 pounds more at the boilers, nothing but the water tube boiler would do.

At the present time it seems as though we had practically reached the highest development possible with existing types of machinery for naval purposes, leaving the designer room only for greater perfection in details. We do not, of course, believe that finality has actually been reached, and it is possible that some radical change may take place which will give us a new type of machinery. Some of the more enthusiastic members of the profession think that the steam turbine is to be the successor of the present steam engine, and assuredly the performance of Parsons' "Turbina" is sufficiently remarkable to justify the most careful study and further experiment. It is very interesting in this connection to know that in this country the development of the steam turbine is in the hands of one of our famous engineers, who is also one of the honorary members of this society—George Westinghouse. He has been developing the steam turbine with special reference to its use in driving electric generators, and some of the results already obtained are very remarkable. With his characteristic energy and courage, he is not satisfied with results on a small scale, but is now getting out a steam turbine to develop about 2000 horse-power on a single shaft, and when this has been built and thoroughly tested we shall be in a position to appreciate more thoroughly the bearing of this form of prime mover on naval engineering.

#### THE PERSONNEL OF THE NAVY.

At the beginning of this address it was remarked that this was a peculiarly appropriate time for discussing the personnel of naval engineering, on account of the radical change which took place this year in the status of the engineer officers of our navy. For many years, as you all know, there had been an unfortunate controversy in our navy, known as the "line and staff fight," resulting from the fact that the line officers, as the older organization, were unwilling that the staff, and especially the engineers, should have all the rights to which the latter believed themselves, as naval officers, entitled. The great grievance of the engineers was that they held what was called "relative rank" and were denied the command of their men and a military title, so that there was always room for the statement, which unfortunately was made at times, that they were not really officers and had only a *quasi* rank. All men who have passed middle age have probably realized personally the difficulty of bringing about any radical change in existing conditions of long standing, and I really believe that the trouble in the navy was largely a matter of inertia. An enormous amount of valuable effort was wasted on both sides; the one to secure the coveted rights, the other to prevent this result; but matters had been shaping themselves for a considerable time so as to make a new state of affairs inevitable.

A board of naval officers, presided over by Colonel Roosevelt, then Assistant Secretary of the Navy, finally formulated a scheme for carrying out this idea of amalgamation, which was actually proposed in the board by a line officer (Captain Evans). When it was submitted to Congress, two members of the House Naval Committee, George E. Foss and A. G. Dayton, took up the measure very actively, and with the assistance of other members of the committee pushed it forward to complete success, until the Personnel bill became a law March 3, 1899.

Under the provisions of this law the officers of the Engineers Corps were transferred to the line and given new commissions as line officers with actual rank, thus effectually disposing of the phantom of relative rank.

It may occur to some who have only looked into the matter hastily that this scheme of amalgamation is contrary to the spirit of the age, with its tendency toward specialization; but, as an actual fact, the reverse is true. The misapprehension comes from a failure to thoroughly consider the case. When it is proposed to make every naval officer an engineer, we mean an engineer specially fitted for the work to be done in the navy, just as the other training of the line officer is for the duties which come specially to him; in other words, this new line

officer—the "fighting engineer"—is to be a specialist in the very best sense of the term—that is; a man who has been specially and thoroughly trained for the work he has to do.

Among those in attendance at the first business meeting Wednesday morning were:

- Ackerman, William S., Ackerman & Ross, 156 Fifth avenue, New York.
- Almond, Thomas R., Brooklyn, N. Y.
- Almy, Darwin, president and treasurer Almy Water Tube Boiler Company, Providence, R. I.
- Archer, Edward R., chief engineer Tredegar Company, Richmond, Va.
- Ashworth, Daniel, cons. engineer, Pittsburgh, Pa.
- Aue, Joseph E., superintendent the De La Vergne Refrigerating Machine Company, New York.
- Baldwin, Stephen W., New York agent Pennsylvania & Maryland Steel Companies, New York.
- Baldwin, William J., cons. engineer, New York.
- Bang, H. A., cons. engineer H. A. & W. F. Bang, New York.
- Barnes, Abel T., cons. engineer B. F. Sturtevant Company, Jamaica Plain, Boston, Mass.
- Bauer, Charles A., general manager the Warder, Bushnell & Glessner Company, Springfield, Ohio.
- Beach, Giles, church organ builder, Gloversville, N. Y.
- Billings, Charles E., Billings & Spencer Company, Hartford, Conn.
- Bird, John D., superintendent Ball & Wood Company, Elizabeth, N. J.
- Boerner, Emile C., mechanical superintendent Port Chester Bolt & Nut Company, Port Chester, N. Y.
- Bole, Wm. A., superintendent Westinghouse Machine Company, Pittsburgh, Pa.
- Bolton, Reginald P., New York.
- Bowden, James Henry, chief engineer Pennsylvania Railroad Coal Companies, Wilkes-Barre, Pa.
- Bowman, Franklin Meyer, engineer in charge Riter & Conley Mfg. Company's Allegheny works, Allegheny, Pa.
- Boyer, Edwin S., mechanical engineer American Engine Company, New York.
- Boyer, Francis Howard, chief engineer John P. Squire & Co. (Incorporated), East Cambridge, Mass.
- Bradley, W. H., chief engineer Consolidated Gas Company, New York.
- Brooks, Edwin C., superintendent Water Works, Cambridge, Mass.
- Bullard, Dudley Brewster, chief draftsman the Bullard Machine Tool Company, Bridgeport, Conn.
- Burnham, Wm., the Standard Steel Works, Philadelphia, Pa.
- Cary, Albert A., New York.
- Cathcart, William Ledyard, P. A. E. United States Navy, adjunct professor mechanical engineering Columbia University, New York City.
- Challen, Paul Jewill, assistant to general manager Fuel Economizer Company, Matteawan, N. Y.
- Chamberlain, Paul Mellen, assistant professor machine design Lewis Institute, Chicago, Ill.
- Cheney, Walter L., secretary Meriden Machine Tool Company, Meriden, Conn.
- Christie, James, chief engineer Pencoyd Iron Works, Pencoed, Pa.
- Christie, W. Wallace, Paterson, N. J.
- Colby, Albert Ladd, metallurgical engineer the Bethlehem Steel Company, Bethlehem, Pa.
- Corbett, Chas. H., vice-president the Continental Iron Works, Brooklyn, N. Y.
- Cremer, James M., National Meter Company, New York.
- Cullingworth, George R., New York City.
- Darling, Edward P., superintendent buildings and grounds Columbia University, New York.
- Davis, Daniel, master mechanic Standard Silk Company, Phillipsburg, N. J.
- De Puy, C. E., assistant professor machine construction Lewis Institute, Chicago, Ill.
- Derbyshire, Wm. H., president Chambersburg Engineering Company, Chambersburg, Pa.
- Dinkel, George, Jr., chief engineer American Sugar Refining Company, Jersey City, N. J.
- Ekstrand, Charles, assistant chief engineer Brooklyn Cooperage Company, Brooklyn, N. Y.
- Faber Du Faur, A., New York City.
- Fladd, Frederick C., traveling and consulting engineer E. W. Bliss Company, Brooklyn, N. Y.
- Forbes, Wm. Dunderdale, mechanical engineer, Hoboken, N. J.
- Foster, Chas. F., mechanical engineer, Chicago, Ill.
- Fowler, Geo. L., cons. mechanical engineer, New York.
- Frith, Arthur J., Diesel Motor Company, New York City.
- Fritz, John, Bethlehem, Pa.
- Gould, Webster V., Jones & Lamson Machine Company, Springfield, Vt.
- Haines, H. S., vice-president Atlantic & Danville Railway Company, New York.
- Hale, Robt. Sever, Boston, Mass.
- Halsey, F. A., New York City.
- Hartness, James, manager Jones & Lamson Machinery Company, Springfield, Vt.
- Henning, Gustavus C., New York.
- Higgins, Milton P., president Norton Emery Wheel Company and Plunger Elevator Company, Worcester, Mass.
- Hillard, Charles J., president North Side Bridge Company, Pittsburgh, Pa.
- Hobart, James C., secretary and manager the Triumph Electrical Company, Cincinnati, Ohio.
- Holbrook, Dio Lewis, Otis Elevator Company, Yonkers, N. Y.
- Horton, John Theodore, superintendent Dobbie Foundry & Machine Company, Niagara Falls, N. Y.
- Howe, Henry M., Columbia University, New York City.
- Hunt, Charles Wallace, New York.
- Hunt, Robert W., Robert W. Hunt & Co., Chicago, Ill.
- Huston, Charles L., vice-president Lukens I. & S. Company, Coatesville, Pa.
- Hutton, Frederic R., professor mechanical engineering, Columbia University, New York City.
- Idell, Frank E., New York.
- Jacobus, D. S., Stevens Institute, Hoboken, N. J.
- Kafer, John C., passed assistant engineer U. S. N., New York.
- Keep, William J., Michigan Stove Works, Detroit, Mich.
- Kent, Wm., New York.
- King, W. Grant, superintendent Iroquois Iron Works, Buffalo, N. Y.
- Klein, John S., superintendent machinery department National Transit Company, Oil City, Pa.
- Laforge, Fredk. Henry, chief inspector Connecticut Mut. S. B. Insp. & Ins. Company, Waterbury, Conn.
- Laidlaw, Walter, vice-president and manager of works Laidlaw-Dunn-Gordon Company, Cincinnati, Ohio.
- Lodge, Wm., president Lodge & Shipley M. T. Company, Cincinnati, Ohio.
- Logan, John D., superintendent Logan Iron Works, Brooklyn, N. Y.
- Loomis, Fredk. James, chief engineer Benedict & Burnham Mfg. Company, Waterbury, Conn.
- Loring, Charles H., chief engineer U. S. N., Brooklyn, N. Y.
- McBride, James, superintendent New York & Boston Dye Wood Company, Brooklyn, N. Y.
- McFarland, Walter Martin, late chief engineer U. S. Navy, assistant to second vice-president Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.
- McKean, Robert Andrews, engineer Riter & Conley, Pittsburgh, Pa.
- MacLaren, Malcolm Neill, superintendent the Dickson Mfg. Company, Scranton, Pa.
- Main, Charles T., Dean & Main, Boston, Mass.
- Manning, Chas. Henry, general superintendent Amoskeag Mfg. Company, Manchester, N. H.
- Mattes, Wm. F., Scranton, Pa.
- Meier, E. D., engineer in chief Diesel Motor Company, 11 Broadway, New York.
- Melville, George W., chief engineer U. S. N., chief of Bureau Steam Engineering, Navy Department, Washington, D. C.
- Monaghan, Wm. Franchère, mechanical engineer, department of engineering, the United Electric Light & Power Company, New York.
- Moore, D. G., president S. L. Moore & Sons Company, Elizabeth, N. J.
- Morgan, Charles H., president Morgan Construction Company and Morgan Spring Company, Worcester, Mass.
- Morgan, Paul B., secretary Morgan Construction Company, Worcester, Mass.
- Nason, Carleton W., president Nason Mfg. Company, New York.
- Newcomb, Chas. L., manager Deane Steam Pump Company, Holyoke, Mass.
- Nicoll, Chas. H., chief engineer P. Ballantine & Sons, Newark, N. J.
- Norris, Henry McCoy, superintending engineer and works manager Bleckford Drill & Tool Company, Cincinnati, Ohio.
- Norris, J. H., draftsman, Brooklyn, N. Y.
- Odell, Wm. H., mechanical engineer, Yonkers, N. Y.
- Parks, Edward H., mechanical engineer Brown & Sharpe Mfg. Company, Providence, R. I.
- Parsons, H. de B., constructing engineer, New York.
- Paul, John Wallace, superintendent Pittsburgh Writing Machine Company, Kittanning, Pa.
- Phillips, Franklin, Hewes & Phillips Iron Works, Newark, N. J.
- Phlipps, C. W., Eastern manager the Adams-Bagnall Electrical Company, New York.
- Pollock, Alexander, mechanical engineer, New York.
- Pratt, Chas. Richardson, mechanical engineer Sprague Electric Elevator Company, Bloomfield, N. J.
- Rankin, Thomas L., New York.



Rand, Addison C., president Rand Drill Company and treasurer Kendrick Powder Company, New York.  
 Richards, Francis H., mechanical engineer and expert in patent cases, New York.  
 Richmond, George, constructing engineer De La Vergne R. M. Company, New York.  
 Rites, Francis M., Ithaca, N. Y.  
 Robinson, A. W., chief engineer Bucyrus Steam Shovel & Dredge Company, So. Milwaukee, Wis.  
 Robinson, J. M., master mechanic and superintendent Mills Building, New York.  
 Rogers, Winfield S., treasurer and general manager the Ball-Bearing Company, Boston, Mass.  
 Roney, William R., New York.  
 Rowland, Charles Bradley, mechanical and civil engineer Continental Iron Works, Greenpoint, N. Y.  
 Scheffler, F. A., general factory manager the Sprague Electrical Company, Bloomfield, N. J.  
 Schmidt, Chas. R., Baltimore, Md.  
 Schoenborn, W. E., assistant examiner division steam engineering United States Patent Office, Washington, D. C.  
 Schreuder, Andrew M., draftsman Wheeler Condenser & Engineering Company, Carteret, N. J.  
 Scott, Seaton M., mechanical and cons. engineer, New York City.  
 Seaman, Henry B., cons. engineer, 40 Wall street, New York.  
 Sergeant, Chas. H., Brooklyn, N. Y.  
 Shankland, Edward Clapp, member of firm, E. C. & R. M. Shankland, Chicago, Ill.  
 Sims, Gardiner C., superintending engineer Army United States Transport Service, New York.  
 Smith, Jesse M., cons. mechanical and electrical engineer, New York.  
 Smith, Oberlin, president Ferracute Machine Company, Bridgeton, N. J.  
 Snell, Henry I., mechanical engineer, Philadelphia, Pa.  
 Snow, Sylvester M., Snow & Humphreys, Boston, Mass.  
 Stevenson, Archy A., engineer Standard Steel Works, Burnham, Pa.  
 Stiefel, Ralph C., mechanical engineer, Ellwood City, Pa.  
 Stillman, Francis Hill, New York.  
 Swasey, Ambrose, Warner & Swasey, Cleveland, Ohio.  
 Sweet, John E., president Straight Line Engine Company, Syracuse, N. Y.  
 Taylor, John T., New York.  
 Taylor, Wm. M., president Chandler & Taylor Company, Indianapolis, Ind.  
 Thompson, Edward P., Registered Sol. Pat. and Cons. Electrical Engineer, New York.  
 Torrance, Henry, Jr., manager New York office Hendrick Mfg. Company, New York.  
 Torrance, Kenneth, engineer Ridgewood Pumping Station, Ridgewood Engineering House, Brooklyn, N. Y.  
 Torrey, Herbert Gray, U. S. Assayer, U. S. Assay Office, New York.  
 Townsend, David, Philadelphia, Pa.  
 Treat, Charles Henry, Mansfield Machine Works, Mansfield, Ohio.  
 Trump, Charles N., president Trump Bros. Machine Company, Wilmington, Del.  
 Tucker, Edwin Davis, mechanical engineer R. Hoe & Co., New York.  
 Turner, John, chief engineer Sherry's, New York.  
 Vanderhoef, Geo. Nixon, mechanical engineer New York branch Dodge Mfg. Company, New York.  
 Varney, Wm. Wesley, City Commissioner, Baltimore, Md.  
 Ware, Justin A., secretary and treasurer Crompton Loom Works, Worcester, Mass.  
 Warner, Worcester R., Warner & Swasey, Cleveland, Ohio.  
 Webster, William Reuben, Jr., superintendent Bridgeport Brass Company, Bridgeport, Conn.  
 Wellman, Samuel T., New England Building, Cleveland, Ohio.  
 Wheeler, F. Meriam, George F. Blake Mfg. Company, New York.  
 Wheeler, Seth, president Wheeler Paper Company, Albany, N. Y.  
 White, Maunsel, Bethlehem Iron Company, Bethlehem, Pa.  
 Wiley, Wm. H., New York.  
 Williams, Franklin, New York manager Eastwood Wire Mfg. Company, New York.  
 Williams, Thomas Hilton, president A. A. Griffing Iron Company, Jersey City, N. J.  
 Williston, Arthur L., director Department of Science and Technology Pratt Institute, Brooklyn, N. Y.  
 Wilson, James Edward, president the Bridgeport Cycle Spring Company, Bridgeport, Conn.  
 Winship, J. G., mechanical engineer with Geo. F. Blake Mfg. Company, New York.  
 Woodbury, C. J. H., assistant engineer American Bell Telephone Company, Boston, Mass.  
 Woolson, Orosco C., cons. engineer and contractor, New York.

Wyman, Horace Winfield, Wyman & Gordon, Worcester, Mass.

#### Report of Council.

The report of the Finance Committee showed that the expenditures for the year were \$34,542, and the disbursements \$35,139, the cash on hand being \$10,092. The total assets of the society amount to \$53,006. During this session the membership was increased by the addition of 52 members, 10 associate members and 42 juniors.

#### The Trip to Europe Next Year.

The report of the council contained a letter from the president and secretary of the Institution of Civil Engineers of Great Britain extending the hospitality of the institution to those members who intended visiting Europe next year. Mr. Henning reported that a canvass of the entire society showed that 511 members intended taking the foreign trip. Upon consulting the several steamship lines it was found that only one—the Hamburg—had vessels which were not engaged. Of these the "Fürst Bismarck" can accommodate 550 passengers. The fare on this boat would be \$110. In order that an excursion may be arranged and a boat obtained for the exclusive use of the party, it is necessary that the secretary be informed during the next three weeks by all members who intend going. Upon making application \$25 must be paid, one-half the full amount three months before sailing and the balance six weeks before sailing. It is the intention to leave New York during the latter part of May or first part of June.

#### The Robert Fulton Memorial.

A fact not generally known is that the body of Robert Fulton lies in Trinity churchyard, New York, in the Livingston family vault, without monument or inscription to indicate his resting place. Deeming it most desirable that there should be a suitable monument, the council of the society, at the Washington meeting, decided to take action in the matter and appointed a committee to investigate the proper method of accomplishing the suitable marking of the grave. This committee found its effort heartily met both by the Trinity Corporation and members of the Fulton family, and has been assured that a suitable place will be provided in the churchyard for such a monument as may be erected. It is desirable that the Society of Mechanical Engineers should erect a memorial monument, and while no especial design has as yet been adopted a number of suggestions are under consideration. The monument fund now amounts to \$925. It is to be hoped that an amount sufficient for the erection of a memorial suitable for the marking of the resting place of one of the earliest and greatest American engineers will be speedily obtained. Blanks may be obtained from the secretary of the society.

#### Steam Boiler Trials.

The report of the committee on the revision of the society code of 1885, relative to a standard method of conducting steam boiler trials, was accepted, and its use recommended. Colonel Meier said that the report was undoubtedly the best in existence, and that it would certainly become the standard in the United States. The report presents the most complete and satisfactory rules for conducting steam boiler trials.

#### Officers for Ensuing Year.

For the coming year the following officers were elected:

Chas. H. Morgan of Worcester, Mass., president; Jesse M. Smith of New York, Stevenson Taylor of Hoboken, N. J., and David Townsend of Philadelphia, vice-presidents; F. H. Boyer of Somerville, Mass.; John A. Brashear of Allegheny, and Alfred H. Raynal of Washington, managers; Wm. H. Wiley, treasurer.

The John Simmons Mfg. Company have had their articles of incorporation recorded with the County Clerk at Newark, N. J. They will deal in Engineers' and Plumbers' Supplies, and manufacture Cast Iron Pipe with a plant in Newark. The capital stock is \$100,000. The incorporators are John Simmons, Charles H. Simmons, John S. Simmons, Frank H. Simmons, Emery Davis, William J. Carew, Herbert Manser and John R. Manser.

The annual report of James Campbell, factory inspector for Pennsylvania for the fiscal year ended October 31, 1899, advanced sheets of which have just been issued, shows that there were 182,270 more persons employed in the manufacturing establishments under the supervision of the factory inspector in 1899 than in 1898. Mr. Campbell says in his report that if the demand for skilled workmen and laborers could be supplied the increase would have been much greater.

## The Iron and Metal Trades.

As is natural after so long a period of the intensest activity, the Iron and Steel markets have quieted down considerably. A number of causes contribute to bring this about. Prominent among them is the circumstance that a large part of the requirements in many lines has been covered, not alone for the first half of 1900, but also for a part of the second half. This is notably true of Bessemer Pig, and largely true of Foundry Irons. It is true also of Steel Rails, but to a more limited extent only of Steel Billets and Sheet Bars. Some of the large consuming interests, for Billets, have covered pretty well into the spring. Others, on the other hand, have been in the market for very considerable blocks for the first half, but profess to have views as to prices which sellers are quite unwilling to entertain. Billets, like a number of rolling mill products, have had an appearance of weakness lately, which is really nothing but a readjustment in prices. The days of high premiums to procure immediate delivery are over for the present, and values are on a more conservative and sounder basis, taking costs into consideration.

Another reason for the lull is closely connected with the season. A good deal of outdoor work, in many sections of the country, ceases altogether. Thus in building, and in many municipal improvements, consumption falls low. Usually manufacturers employ the dull time to accumulate stocks for the spring trade, usually the largest from the point of tonnage of all the seasons. Even with the sharp lessons of the present year, manufacturers may be expected to be chary about filling their warehouses with goods into which relatively high priced raw material must go. Nor are merchants, wholesale and retail, likely to stock up liberally at to-day's range of values in the face of possible adverse contingencies. Until there is clear evidence that the spring trade will develop as well as the general prosperity of the country would seem to justify, buying is apt to be cautious.

The effect, if it develops at all, will take the form, probably, of increasing promptness of deliveries on the part of sellers, and later on of some desire on the part of consumers to have shipments deferred. An intermediate stage may be that consumers will find it convenient to accumulate some stock as a safeguard against the harassing delays to which they have been subjected.

It is believed, too, in the trade that the powerful influence of the great consolidations will be exerted toward preventing any serious fluctuations.

While costs have advanced all along the line, there are many wide differences in the influence of that factor. To many producers the full effect will not tell until we enter the second half of next year.

While export shipments continue in good volume, the great bulk of the material going out is on contracts taken long ago at low prices. For months, in many leading lines, new transactions have been small and infrequent. Still, even at the present level of values, for the export trade, some business is being done and more is pending. Thus we understand that a big block of Cast Iron Pipe is being figured on.

In the Metal trade dullness is the general feature. Copper hovers nominally around 17 cents. Tin has been declining, as seems only natural considering the fact that consumption has been dropping off. Spelter has recovered slightly in price.

## A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type.  
Declines in Italics.

	Dec 6, 1899.	Nov. 29, 1899.	Nov. 8, 1899.	Dec. 7, 1898.
<b>PIG IRON :</b>				
Foundry Pig, No. 2, Standard, Philadelphia.....		\$23.25	\$23.75	\$11.00
Foundry Pig, No. 2, Southern, Cincinnati.....	20.75	20.75	.....	9.75
Foundry Pig, No. 2, Local, Chicago.....	<b>23.50</b>	23.50	23.00	11.00
Bessemer Pig, Pittsburgh.....	<b>24.90</b>	24.90	24.50	10.50
Gray Forge, Pittsburgh.....	<b>21.25</b>	21.25	21.00	9.25
Lake Superior Charcoal, Chicago.....	25.50	25.50	25.50	11.50
<b>BILLETS, RAILS, ETC.:</b>				
Steel Billets, Pittsburgh.....	35.00	34.50	38.00	15.50
Steel Billets, Philadelphia.....	36.00	.....	40.00	17.25
Steel Billets, Chicago.....	.....	.....	.....	17.00
Wire Rods, Pittsburgh.....	.....	.....	.....	20.25
Steel Rails, Heavy, Eastern Mill.....	35.00	35.00	35.00	17.00
Spikes, Tidewater.....	2.65	2.65	2.65	1.40
Splice Bars, Tidewater.....	<b>2.35</b>	2.35	2.30	1.05
<b>OLD MATERIAL :</b>				
O. Steel Rails, Chicago.....	20.00	20.00	20.00	7.75
O. Steel Rails, Philadelphia.....	.....	25.00	24.00	10.25
O. Iron Rails, Chicago.....	28.00	29.00	33.00	12.50
O. Iron Rails, Philadelphia.....	.....	29.00	26.00	12.75
O. Car Wheels, Chicago.....	<b>21.00</b>	21.00	20.00	10.50
O. Car Wheels, Philadelphia.....	.....	23.00	24.00	10.00
Heavy Steel Scrap, Chicago.....	<b>19.00</b>	19.00	17.00	7.75
<b>FINISHED IRON AND STEEL :</b>				
Refined Iron Bars, Philadelphia.....	.....	2.20	2.20	1.10
Common Iron Bars, Youngstown.....	2.10	2.10	2.20	.95
Steel Bars, Tidewater.....	2.45	2.45	2.50	1.10
Steel Bars, Pittsburgh.....	2.30	2.20	2.25	.95
Tank Plates, Tidewater.....	2.55	2.65	2.95	1.25
Tank Plates, Pittsburgh.....	2.35	2.40	2.60	1.12½
Beams, Tidewater.....	2.40	2.40	2.40	1.35
Beams, Pittsburgh.....	2.25	2.25	2.25	1.20
Angles, Tidewater.....	2.40	2.40	2.40	1.20
Angles, Pittsburgh.....	2.25	2.25	2.25	1.10
Skelp, Grooved Iron, Pittsburgh.....	1.97½	2.00	2.00	1.10
Skelp, Sheared Iron, Pittsburgh.....	2.35	2.35	2.40	1.20
Sheets, No. 27, Chicago.....	3.00	3.00	3.00	1.99
Sheets, No. 27, Pittsburgh.....	2.85	2.90	3.00	1.85
Barb Wire, f.o.b. Pittsburgh.....	3.55	3.55	3.55	1.65
Wire Nails, f.o.b. Pittsburgh.....	2.95	2.95	2.95	1.25
Cut Nails, Mill.....	2.45	2.40	2.50	1.07½
<b>METALS :</b>				
Copper, New York.....	17.00	17.00	17.00	12.65
Spelter, St. Louis.....	4.35	4.15	4.50	5.25
Lead, New York.....	<b>4.60</b>	4.60	4.57½	3.60
Lead, St. Louis.....	<b>4.50</b>	4.47½	4.45	3.52½
Tin, New York.....	27.00	27.60	30.00	18.00
Antimony, Hallett, New York.....	9.75	9.75	9.75	9.00
Nickel, New York.....	40.00	40.00	40.00	35.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York.....	<b>4.84</b>	4.84	4.82½	2.90

## Chicago. (By Telegraph.)

Office of The Iron Age, 805 Fisher Building, }  
CHICAGO, December 6, 1899. }

Quite a disposition prevails to talk the market down. Rumors are put in circulation of lower prices on various articles and of weakness in some lines which have hitherto been especially prominent for their strength. Some of the reports in circulation are so absurd that they easily refute themselves. The only lines in which any real weakness is seen continue to be Sheets and Narrow Plates. Buyers have endeavored to find cheap sellers in other branches, but have been unable to discover any one willing to make concessions of the character reported. The condition of trade is such that many orders are undoubtedly ready to be placed if anything like bargains could be picked up. The volume of business at present is rather light, as is usual this month, but a revival in the demand is expected toward the end of the year or else early in the new year. An exception to the general quietness is the demand from car building interests, which is still of an excellent character.

**Pig Iron.**— It is expected that an advance of at least 15c. per ton will be made January 1 on freight rates on Southern Pig Iron by railroad lines running north from the Ohio River, and all sales of such Iron are now being made subject to that advance. The Southern railroads are still so short of cars that furnace companies are having more trouble than ever in trying to make shipments on their contracts. This as well as the blowing out of furnaces for repairs brings a sharp demand for carload lots of spot Iron. The demand at present is either for immediate delivery or else deliveries during the last half of next year. Several large lots are under negotiation for the longer delivery. Influences in the market are still on the side of strength rather than weakness. Malleable foundries are seeking a supply of Iron for their use and are trying to purchase Charcoal Iron on account of the sold up condition of local Coke furnaces. The Ironquils Furnace was blown in on Saturday, but its product is covered by sales previously made. The starting of the new Steel works at Ensley, Ala., last week will take a large tonnage of Pig Iron out of the general trade. We quote for cash as follows:

Lake Superior Charcoal.....	\$25.50 to \$26.00
Local Coke Foundry, No. 1.....	24.50 to 25.00



Local Coke Foundry, No. 2.....	23.50 to	24.00
Local Coke Foundry, No. 3.....	22.50 to	23.00
Local Scotch, No. 1.....	25.00 to	25.50
Ohio Strong Softeners, No. 1.....	25.00 to	26.00
Southern Silvery, according to Silicon.....	25.50 to	27.00
Southern Coke, No. 1.....	22.85 to	23.85
Southern Coke, No. 2.....	21.85 to	22.85
Southern Coke, No. 3.....	21.10 to	21.85
Southern Coke, No. 1 Soft.....	22.85 to	23.85
Southern Coke, No. 2 Soft.....	21.85 to	22.85
Foundry Forge.....	20.85 to	.....
Gray Forge and Mottled.....	20.85 to	.....
Southern Charcoal Softeners, according to Silicon.....	21.85 to	25.85
Alabama and Georgia Car Wheel.....	24.85 to	25.85
Malleable Bessemer.....	25.00 to	26.00
Standard Bessemer.....	..... to	.....
Jackson County and Kentucky Silvery, 8 per cent. Silicon.....	32.00 to	32.50

**Bars.**— All Bar Iron mills supplying this territory are loaded to their utmost for deliveries running far into next year. Only a small part of their capacity can occasionally be diverted to supplying the market for early requirements. The largest manufacturers report good orders being booked for future delivery and specifications on contracts coming in so freely that they are further in arrears on deliveries than a month ago. The demand for Soft Steel Bars is much smaller than for Bar Iron, but the mills are so well supplied with work that prices have not weakened. Mill shipments are quoted at 2.30c. to 2.40c., Chicago, for Common Iron, 2.35c. to 2.65c. for Soft Steel Bars, and 2.65c., base, for Bands. Jobbers are still favored with a good demand from stock, but the volume of business is somewhat lighter than it has been. Small lots from stock are quoted at 2.90c., minimum, for Bar Iron; 2.65c. to 3c. for Soft Steel Bars, and 3.90c. to 4c. for Norway and Swedish Iron.

**Car Material.**— An excellent trade is still in progress not only with car builders but railroad companies purchasing material for their own car shops.

**Structural Material.**— Some small orders from the building trade constitute about all the business now coming forward for mill shipment. Bridge work is quiet and no large contracts are in sight at the moment. Mill shipments are quoted as follows, Chicago delivery: Beams, Channels and Zees, 15-inch and under, and Angles, 3 to 6 inches, 2.40c.; Beams, &c., 18 inches and over, and Angles over 6 inches and under 3 inches, 2.50c.; Tees, 2.45c.; Universal Plates, 2.80c. to 2.90c. The demand for small lots of Shapes from local yards continues very good, a steady trade being done with parties who cannot wait months for mill shipments.

**Plates.**— The market is reported somewhat better. The mills rolling narrow widths have booked sufficient business to make them hold prices more firmly. It is asserted that a full assortment of Plates covering wide and narrow sizes cannot now be bought much under 2.90c., Chicago. A sale of 300 tons for May delivery has just been made at 3c. It would seem from this that the situation is greatly improved. Bessemer Tank Plates are sold considerably lower than Open Hearth, and all buyers do not take this fact into consideration in comparing prices. Our quotations are for Open Hearth stock. Mill shipments, Chicago delivery, are quoted as follows: Tank, 2.90c. to 3.05c.; Flange, 3.15c. to 3.25c.; Marine, 3.30c. to 3.50c.; Fire Box, 4c. to 5½c. Jobbers quote Tank from store at 3.25c. to 3.40c., and Flange, 3.50c. to 3.65c.

**Merchant Pipe.**— The approach of the end of the year is causing a considerable slackening in the demand, and trade is rather quiet as compared with previous weeks. Prices are unchanged, carload lots being still quoted at 50 and two 10's, and less than carload lots at 50, 10 and 5 per cent. Merchant Steel Boiler Tubes are quoted as follows: 1¼ to 1¾ inches, 35 per cent. off on Steel or Iron; 2 to 2¼ inches, 50 per cent. off on Steel and 45 per cent. off on Iron; for 3-inch and larger, 52½ per cent. off on Steel, 47½ per cent. off on Iron.

**Sheets.**— The situation is not improved. The inquiry is more active and for a much larger tonnage, but orders are not being placed. Buyers are sounding the market for the purpose of convincing themselves that prices have struck bottom. A large business is anticipated as soon as this fact is established. Manufacturers report some prospect of the mills getting together on the scheme for consolidation and plans are progressing to this end. Reports are current of lower prices being made, but usual quotations are 3c. to 3.15c., Chicago, on mill shipments of No. 27 Black Sheets, and 75 and 5 to 75 and 10 per cent. on Galvanized. Jobbers are now finding a smaller demand from stock. They quote small lots at 3.25c. to 3.40c. for No. 27 Black, and 70 and 5 to 70 and 15 per cent. off for Galvanized.

**Merchant Steel.**— One of the leading shippers into this district reports November by far the largest month in values he ever had, but with tonnage running about the same as in last November. The current demand is only fair, but specifications are being freely received on contracts. Mill shipments, Chicago delivery, are quoted as

follows: Smooth Finished Machinery Steel, 2.95c. to 3.05c.; Smooth Finished Tire, 2.80c. to 3c.; Open Hearth Spring Steel, 3.60c. to 3.75c., base; Toe Calk, 3.20c. to 3.50c., base; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, 3.45c. to 3.65c.; Ordinary Tool Steel, 7c. to 7½c.; Special, 13c. and upward. Jobbers are quoting from store: Crucible Spring Steel, 6c. rates; Open Hearth Spring Steel, 5c.; Smooth Machinery Steel, 5½c.; Toe Calk Steel, 4c.

**Billets and Rods.**— Inquiries for Billets are steadily coming from consumers who are obliged to make purchases from distant mills, as the local works are unable to supply any part of their product for the open market. It is expected that in the near future a supply can be obtained from some additional sources. The new Steel works at Ensley, Ala., are now in operation, and the Premier works at Indianapolis will also soon be running again. A supply of Open Hearth Billets from these works will assist in relieving the situation. Nothing has been done in Wire Rods.

**Rails and Track Supplies.**— Small lots of Standard Sections are being booked, making a fair tonnage for the week. Makers see much more business in sight for next year and expect to have all they can possibly do. The demand for Light Sections has been less active. Prices of Track Fastenings are as follows: Steel Fish Plates, 2.25c. to 2.50c.; Iron Fish Plates, 2.30c. to 2.50c.; Spikes, 2.65c. to 2.75c.; Track Bolts, with Hexagon Nuts, 3.95c. to 4c.; Square Nuts, 3.80c. to 3.85c.; Steel Links and Pins, 3.25c.; Iron Links and Pins, 3.15c.

**Old Material.**— The various forms of Scrap Iron are in better supply and the market is running more strongly in buyers' favor. Old Iron Rails and other rolling mill stock are being offered in good quantities and prices are weak. Cast Scrap is in much less demand, as consumers seem to be well stocked. Steel Scrap, on the other hand, is in active demand and prices are firmly held. Approximate market prices are as follows per gross ton:

Old Iron Rails.....	\$28.00 to	\$29.00
Old Steel Rails, mixed lengths.....	20.00 to	20.50
Old Steel Rails, long lengths.....	22.00 to	24.00
Relaying Rails.....	28.00 to	30.00
Old Car Wheels.....	..... to	22.00
Heavy Melting Steel Scrap.....	19.00 to	20.00
Mixed Steel.....	15.50 to	16.00

Following prices are per net ton:

No. 1 Railroad Wrought.....	\$24.00 to	\$24.50
No. 1 Railroad Track.....	20.00 to	20.50
Dealers' Forge.....	17.50 to	18.00
Iron Fish Plates and Angle Bars.....	24.00 to	25.00
Steel or Mixed Iron and Steel ditto.....	19.00 to	20.00
No. 1 Cut Mill, for busheling.....	13.50 to	14.50
Pipe and Flues.....	13.00 to	13.50
Heavy Cast.....	14.50 to	15.00
Stove Plate.....	10.00 to	10.25
Railroad Malleable Cast.....	..... to	16.50
Agricultural Malleable Cast.....	..... to	15.00
Iron Car Axles.....	28.00 to	29.00
Steel Car Axles.....	23.00 to	24.00
Horseshoes.....	18.00 to	19.00
Cast Borings.....	9.50 to	10.00
Steel Car Axle Turnings.....	12.50 to	13.00
Iron Car Axle Turnings.....	13.50 to	14.00
Machine Shop Turnings.....	11.50 to	12.00
Old Boilers, Iron, whole.....	8.00 to	9.00
Old Boilers, Iron, cut.....	13.00 to	14.00
Old Boilers, Steel, whole.....	7.00 to	8.00
Old Boilers, Steel, cut.....	12.00 to	13.00

**Metals.**— Little change is observed in metals. Carload lots of Lake Copper are held at 17½c., and Casting Copper at 17¼c. Corroding Lead is a little higher, commanding 4.65c., while Desilverized is available at 4.55c. The situation in Lead looks a little stronger, the demand showing some improvement, particularly in the East. Spelter is quoted in carload lots at 4.35c. to 4.40c.

**Tin Plate.**— The local market is quiet and is expected to continue in this condition until the middle of January, when a much livelier trade is anticipated in preparation for spring.

Jefferson Furnace, at Jefferson, Texas, was blown in last Wednesday and is now making Charcoal Pig Iron of Bessemer quality, or of extra low phosphorus. Rogers, Brown & Co., Monadnock Building, Chicago, are sales agents.

The Carpenter Steel Company, F. W. Lane, manager, 9 South Canal street, Chicago, are distributing an interesting pamphlet, setting forth their various products. Their Tool Steel brands comprise Air-Hardening, Double Special, Special, Double Extra, Extra, Standard Special, Standard, Comet, and Titan, each of which has its special fitness for a certain class of work.

• The Carnegie Steel Company, Limited, of Pittsburgh, have an option on 400 acres of land opposite Glassport on the Monongahela River. The tract extends from Wilson to Blair Stations on the line of the P. V. & C. R. R., a distance of 1½ miles. It is claimed to be an ideal site for manufacturing purposes.

## Pittsburgh.

Office of *The Iron Age*, Hamilton Building, {  
PITTSBURGH, December 6, 1899. }

(By Telegraph.)

**Pig Iron.**—The Pig Iron market has been quiet during the past week, but is very strong. The principal sale of the week was one of 6000 tons of Bessemer Iron, 1000 tons a month January to June, at \$24, Valley furnace. Other small lots have been sold at prices ranging from \$24 up to \$24.50 for prompt Iron. Forge Iron is very firm at about \$21, Valley furnace. Foundry Iron is also stronger, and No. 2 is held at \$23, Pittsburgh. There is not a great deal doing. We quote Standard Bessemer, \$24; Gray Forge, \$21, Valley furnace; Gray Forge, \$21.25 to \$21.50; Bessemer, \$24.90 to \$25.25, depending on delivery; No. 2 Foundry, \$23 to \$23.25, all f.o.b. Pittsburgh.

**Billets.**—The Steel market continues very dull, and prices are weak and lower. Buyers are refusing absolutely to take hold, and there is practically nothing doing. Billets are offered at about \$35, Pittsburgh, for first quarter, but it is probable better could be done on a firm offer and for desirable tonnage. Basic Steel is quiet, and prices are also weak. It is quoted at about \$45, but this price could be materially shaded on a firm offer.

**Sheet Bars.**—The market is very dull, and prices are weak. We quote at \$35 to \$36, at mill. It is claimed that some low prices have recently been made on Sheet Bars.

**Muck Bars.**—We are not advised of any sales. We quote standard grades at \$33.25, Pittsburgh.

**Spelter.**—The market is dull and weak, and we quote at 4.30c. to 4.35c., Pittsburgh.

(By Mail.)

No material change has occurred in the situation since our report of last week. The quietness on Steel and certain lines of Finished Material, before referred to, is perhaps more pronounced and prices on these products a little easier. There has been no slump in the market, nor is it believed there will be, as the large consolidations have such control of the situation that the decline in prices is quite certain to be gradual. It is believed that were it not for the large consolidated companies the situation would be considerably demoralized. The decline in prices which has come, particularly in Plates, might properly be called a readjustment, as it was recognized by every one in the trade that prices on Plates and other kinds of Finished Material were entirely too high, and out of proportion altogether to raw material. The situation is likely to be quiet until after the first of the year, when considerable tonnage is expected to be placed. As it is now, buyers are confining their purchases to small lots for immediate requirements. In the week some Bessemer Iron has been sold for delivery in first half at \$24, Valley furnace. Steel is very quiet and weaker in price. Some of the Steel mills are showing more of a disposition to go after tonnage for next year. In Finished Material nothing of special interest has developed, and it is likely to be quiet until after the turn of the year. A good many concerns take stock and close their books this month, and will not buy anything they can possibly help.

**Structural Material.**—Some very large contracts involving a heavy tonnage are in sight and may be closed at an early date. Most of the work is in the East, and some jobs under way there are very large and will require many thousands of tons of material. Among these is a new bridge across the East River. No large jobs have recently been placed, but there is a good steady demand for small lots. Both local mills are still considerably behind in deliveries, and some Shapes have recently been delivered which should have been shipped out in August. There has been no change in prices. A meeting of the Beam Pool may be held this month. We quote: Beams and Channels, 15-inch and under, 2.25c.; 18, 20 and 24 inch, 2.35c.; Angles, 3-inch and up to 6 x 6, 2.25c.; Angles, under 3-inch, 2.50c.; Tees, 3-inch and larger, 2.30c.; under 3-inch, 2.50c.; Zees, 3-inch and larger, 2.25c.; Grooved Rolled Plates, 2.50c., Pittsburgh.

**Bars.**—The situation is about as noted last week. There is only a moderate amount of tonnage being placed, but some of the car builders are buying pretty freely and specifications on old contracts are coming in right along. Some of the Bar Mills are apparently as busy as they have been at any time this year, while other plants are pretty well caught up, and in some cases are running

single turn. There is a good deal of range in prices being quoted on both Iron and Steel Bars, but for carloads 2.15c., Valley mill, is the general market. For desirable orders a few mills might slightly shade this price. Steel Bars are quoted at 2.20c. to 2.25c. by outside mills, while for Refined Iron Bars, local mills quote 2.40c. at mill. As stated last week, a few mills might possibly shade the above prices, while on the other hand other mills that are still well filled up are asking higher prices.

**Plates.**—Demand is only fair and is likely to continue so until the first of the year. Some very low prices are being made on Plates of narrow sizes. We quote Tank, ¼-inch and heavier, 2.35c. to 2.60c., the lower price for narrow sizes is being made by mills that do not roll over 60 inches wide. We quote Sheared at 2.55c. to 2.60c.; Flange, 2.65c. to 2.70c.; Marine, 2.75c. to 2.80c.; Fire Box, 3c. to 3.75c., depending on quantity, all f.o.b. maker's mill.

**Steel Rails.**—Only moderate inquiries are in the market. We quote at \$35 to \$37 at mill for Standard Sections.

**Ferromanganese.**—We continue to quote domestic Ferro at \$100 in carload lots, while higher prices are paid for small lots for prompt delivery.

**Sheets.**—The Sheet trade does not show any improvement, either in demand or prices. It is reported a committee is at work on a plan to bring the Sheet mills into a combination of some kind. As noted last week, some of the Sheet mills have accumulated very large stocks and are naming low prices to move them. We quote No. 27 Black Sheets at 2.85c. to 2.90c.; No. 28, 2.90c. to 2.95c. These prices give a fair range of the market, but it is possible a few mills might name slightly lower prices for very desirable orders and for shipment this year. For delivery next year some mills are quoting considerably higher prices than the above. Low prices continue to be made on Galvanized Sheets, and we quote at 75 and 2½ per cent to 75 and 5 per cent., with 15c. freight allowance for carload lots.

**Skelp.**—The Skelp market continues very quiet, and there is hardly enough doing to establish a price. We quote Grooved Iron and Steel Skelp at 1.97½c. to 2c., and Sheared at 2.35c. to 2.40c., delivered buyer's mill. For large tonnage and desirable sizes to roll, some mills might shade these prices.

**Merchant Steel.**—The situation in Merchant Steel is quiet, but the tone of the market is fairly strong. There has been no material change in prices since our last report. We quote: Toe Calk, 2.75c., base; Tire, 2.75c., base; Open Hearth Spring, 3.25c. to 3.50c.; Plow Slabs, 3-16 and heavier, 2.75c. to 3c.; Bessemer Machinery, 2.75c. to 3c.; Sleigh Shoe, 2.75c. to 3c.; Cutter Shoes, tapered and bent, 3.75c. to 4c.; Cant Hook Steel, Open Hearth, 4c. to 4.25c.; Crucible, 5c. to 5.25c.; Tool Steel, 7c. and upward, depending on quality. Terms, net cash 30 days.

**Pipes and Tubes.**—There is a fair tonnage in Merchant Pipe being placed considering the lateness of the season. We quote at 50 and 10 and 10 per cent. discount for carload lots, delivered, and 50 and 10 to 50 and 10 and 5 per cent. for small lots, f.o.b. maker's mill. Screw and Socket Joint Weld Casing is 37½ per cent., and Inserted Joint 32½ per cent. in carload lots, with an optional 5 per cent. to dealers. On Boiler Tubes we quote: 1¼-inch and 1½-inch Iron, 40 per cent.; Steel, 40 per cent.; 1¾ to 2½ inch Iron, 50 per cent.; Steel, 55 per cent.; 2¾-inch and larger Iron, 52½ per cent.; Steel, 55 per cent., with an extra 5 per cent. in carloads; less than carloads, f.o.b. maker's mill, Pittsburgh, while carloads are delivered.

**Connellsville Coke.**—Last week there were nearly 18,500 ovens in the Connellsville region active and less than 1000 ovens idle, the output being considerably over 190,000 tons. The large consumers of Furnace and Foundry Coke have nearly all contracted for next year, and the demand therefore is mostly for small lots. Prices on Coke are very strong and we quote Furnace Coke at \$2.75 to \$3, and Foundry Coke at \$3 a ton, f.o.b. at oven.

## St. Louis. (By Telegraph.)

Office of *The Iron Age*, 512 Commercial Building, {  
ST. LOUIS, December 6, 1899. }

While not wholly pertinent to a trade report we mention an evidence of the people's prosperity as shown in St. Louis, particularly on "Hospital" Saturday and Sunday. A collection is yearly made of contributions from all classes, and this year's returns, not yet wholly compiled, promise an increase of at least one-third.

**Pig Iron.**—The regular run of small buying is being done, but for larger quantities than in past years. An occasional 1000-ton lot is entered up, one in mind being for delivery first five months of next year. Larger buy-



ers are pretty well covered into 1900, and some hold off, expecting lower prices. The furnaces recently blown in are said to be sold up, and others in contemplation are not expected to cut much figure in the way of easing up prices. In fact, it is expected that *The Iron Age* report for December 1 on furnace and warrant yard stocks will show further reductions in visible supply. St. Louis prices are unchanged, but freight rates to Missouri points were increased December 1 50c., making the new through rate from Birmingham district \$6 per ton. We quote on cars, St. Louis:

Southern, No. 1 Foundry.....	\$22.25 to \$22.50
Southern, No. 2 Foundry.....	21.50 to 21.75
Southern, No. 3 Foundry.....	20.25 to 20.50
No. 1 Soft.....	22.25 to 22.50
No. 2 Soft.....	21.50 to 21.75
Gray Forge.....	20.00 to 20.25

**Bars.**—Sales are still in good volume, but the near approach of inventory day brings individual orders of smaller quantities to jobbers. Stocks of the latter are by no means what they would like, and it is not known that any one of them is asking mills to hold off deliveries. Leading iron mills are said to be out of the present market for scrap, but it is said that where agreements as to price can be made nothing is declined. Car building companies, both street and freight, are entering up new orders constantly, and the future promises excellent business. Mill prices for bar iron in carloads remain 2.35c. minimum, base, East St. Louis. Jobbers' price, 2.75c. to 2.90c., base. Soft steel is in good demand; mills' minimum base price is about 2.50c. Jobbers ask 3c., base.

**Rails and Track Supplies.**—Business is reported as satisfactory, but deliveries on sundry railway material are not as prompt as desired. We quote: Splice Bars, Steel, 2.55c.; Iron, 3c. to 3.50c.; Track Bolts, with Square Nuts, are now 3.80c.; with Hexagon Nuts, 3.95c.; Spikes, 2.85c.; Steel Links and Pins, 3.20c.

**Pig Lead.**—Quiet and firm. The leading interest is said to be out of the market for this year with a bare possibility of being able to squeeze out a little extra for open market. Prices have advanced to 4.50c. for soft Missouri and Chemical, Desilverized being held at 4.52½c. Lead ore remains at \$27 per 1000 lbs.

**Spelter.**—Is in a much better condition; 4.35c., St. Louis, may be named as bottom, while bids have been wired in for 100-ton lots at 4.37½c., but not accepted. During the past few weeks when November prices were at low ebb orders aggregating 1000 tons were placed among the principal smelters for export to Liverpool. For the week ending December 2, the top price for Zinc Ore was \$31 per ton, and from private advices it is learned that mines are obtaining about \$33 this week. The situation, on the whole, shows improvement, but no return to the higher figures of Spelter is anticipated.

## Cincinnati. (By Telegraph.)

Office of *The Iron Age*, Fifth and Main streets, {  
CINCINNATI, December 6, 1899. }

While the Pig Iron market has continued very quiet and selling has been confined almost exclusively to small lots, yet there is no feeling of weakness manifest. It is a period of waiting during which prices are firm. No reports of sales at less than quotations have been heard of the past week. Reports from all over the field show consumption to be on the increase. Despite the fact that statistically iron is very scarce, there appears to be iron for sale on all hands. A large number of heavy buyers usually due in the market at this time have not as yet shown up, and there is considerable interest shown in conjectures as to the probable course of the price-list when they do come. Higher prices are not wanted or expected, and no one regards a decline as likely for some months ahead at least. The only sales of any size heard of were 1500 tons of Nos. 2 and 3 Southern Foundry at \$17.50 and \$16.50, respectively, Birmingham. Also 1000 tons of Foundry Iron at full quotations. Mention in last week's letter of a sale of 2500 tons of No. 1 Foundry should have been at 25c. less than quotations and not 25c. more, as reported. In a letter to a Cincinnati agent the president of the leading Southern interest writes as follows: "None of the Southern consumers have any stocks. These are the facts, and, as before stated, they are convincing to me of the inherent strength of the market. If there was a demand on the South for 30,000 tons of new orders for shipment over the next four or five months there is no one concerned that could take the order, nor do I believe that there are any three or four of them who could take it, even if it should be fairly distributed among the different grades. Buying during October and November has been done by small consumers, and in view of the fact that it has been confined almost exclusively to small consumers in carload to 100-ton lots it is remarkable the amount that has been sold. Now tell me where the iron is to come

from when the large consumers come into the market." We quote, f.o.b. Cincinnati:

Southern Coke, No. 1.....	\$21.75
Southern Coke, No. 2.....	20.75
Southern Coke, No. 3.....	19.75
Southern Coke, No. 4.....	19.50
Southern Coke, No. 1 Soft.....	21.75
Southern Coke, No. 2 Soft.....	20.75
Southern Coke, Gray Forge.....	\$19.00 to 19.50
Southern Coke, Mottled.....	19.00 to 19.50
Ohio Silvery, No. 1.....	30.00
Ohio Silvery, No. 2.....	29.00
Lake Superior Coke, No. 1.....	\$23.50 to 24.00
Lake Superior Coke, No. 2.....	22.50 to 23.00

### Car Wheel and Malleable Irons.

Standard Southern Car Wheel, Chilling Grades.....	\$24.75
Standard Southern Car Wheel, No. 2.....	23.75
Lake Superior Car Wheel and Malleable.....	25.00

**Plates and Bars.**—The market is quiet and active, with no change to report in price-lists. We quote, f.o.b. Cincinnati: Iron Bars, carload lots, 2.25c., with half extras; small lots, 2.60c., with full extras; Bar Steel, in car lots, 2.50c., with half extras; small lots, 2.95c., with full extras; Iron Bar Angles, 1½ x 3-16 inch and larger, in car lots, 2.65c.; small lots, 2.80c.; Sheets, No. 10, 3.15c.; No. 27, Stove Pipe, 3.25c.; No. 27, Steel, 3.35c.; Plates, 3c. to 3.10c.

**Old Material.**—There has been a very fair business throughout the week. With the exception of a little weakness in Iron Rails and a little advance in Car Wheels there is no change in prices. We quote, f.o.b. Cincinnati: No. 1 Wrought Railroad Scrap, \$22 to \$23 per net ton; Cast Scrap, \$15.50 to \$16 per gross ton; Axles, \$26 to \$27 per net ton; Iron Rails, \$27 to \$28 per gross ton; Car Wheels, \$22 to \$22.50 per gross ton.

## Cleveland.

CLEVELAND, December 5, 1899.

**Iron Ore.**—To all intents and purposes the entire Ore production for next season has been sold. In the case of some grades of Raw Material, for instance, the Bessemer Ores, no disposition of next season's supply has been made, but inasmuch as every sales agent has on file applications for Ore exceeding in the aggregate all the Ore he will have to dispose of, the matter simply resolves itself into the apportionment of Ore between the customers of the various agents. This will probably be made within the next week. In the case of some of the other grades sales covering practically the entire output had been made in advance subject to whatever price was agreed upon by the operators. The transportation market has manifested extreme activity during the past week. Another accident in the Soo River, connecting Lakes Huron and Superior, caused just such another blockade as that which occurred in September. Upward of 100 Ore laden boats were delayed, and consequently the movement was so seriously retarded as to make it impracticable to clean up the shipments for the season within the time anticipated. The delays occasioned by the blockade and the continued favorable weather has resulted in a determination in many quarters to keep the Ore carrying vessels in commission as late as possible. Carrying rates have gone up to \$1.90 from the head of the lakes, and this has further helped to influence vesselmen to keep their boats in service. Inasmuch as many of the large concerns have carried no insurance this season this is comparatively easy of accomplishment. The Minnesota Iron Company have a large amount of Ore yet to come down, and it is expected that it will be well on toward the end of December before the last of their boats go into winter quarters. No more wild Ore will be shipped from Marquette, but shippers from Escanaba are still in the market for tonnage, and the rate to Ohio ports is firm at \$1. The labor difficulties on the Ore docks which so hindered operations during the summer are likely to be continued through the winter. The men engaged during the winter months in loading Ore from stock piles to cars on Lake Erie docks have demanded 8c. per ton as the new rate. The old price was 6c. They further demand that no Ore be loaded by steam shovels. No action has yet been taken on the demand.

**Pig Iron.**—The fixing of Ore prices during the past week has strengthened the Pig Iron market very materially in almost all branches. Not only has the inquiry increased in volume, but a number of transactions have been closed, and these in many cases were at advanced prices. A sale of Bessemer for January delivery was made at \$24.50. Foundry No. 1 is selling at \$23.50 in the Valley, and Foundry No. 2 is firm at \$23. Some sales of Foundry grades for the third quarter and even for the third quarter and last half of the year have been made and while they do not equal in volume those reported from Chicago, St. Louis and other Western markets, they are of sufficient proportions to indicate clearly a firm confidence in the future. Other furnaces to which application has been made have declined to sell beyond July 1. Many buyers are also in no hurry to tie up under con-

tracts covering the second half of the year, believing that there may be an easing of the situation in April or May. Should the buying continue, however, they may be compelled to cover some material in order to protect themselves. All sales for the third quarter and last half are at prevailing prices. Lake Superior Charcoal remains stationary at the figure last quoted. Southern Irons while still in demand to some extent for mixtures are not selling in this territory to anything like the extent that they were some time ago. Some improvement in this condition of affairs is looked for, however, a little later.

**Finished Material.**—The past week has been by no means uniform in its showing. Some sales agents report a distinct lull, while others have business which by its volume would indicate that many buyers have given up hope of an era of lower prices in the very near future. There has as yet been but little inquiry for quotations for third quarter delivery, although some business running into the fall months has been placed. Among the inquiries for the week was one from a well-known Ohio manufacturing firm for a good sized consignment of Structural Material for the construction of an Ore car unloader for the New Castle, Pa., plant of the National Steel Company.

**Old Material.**—The situation as to prices is practically unchanged over that of a week ago, and in demand it is if anything a little improved. All grades of Scrap are moving pretty freely, and in some instances a shade better prices than those last quoted have been obtained on grades in momentary demand. The supply is, all things considered, very satisfactory.

## New York.

Office of *The Iron Age*, 232-238 William street, {  
NEW YORK, December 6, 1899. }

**Pig Iron.**—The market has been quiet during the last week. Generally speaking, consumers are taking deliveries promptly, but in some branches, notably in the Pipe and Soil Pipe trade, melters complain of a light business, the usual development at this season of the year. Prices are as follows: Lehigh and Schuylkill Irons, for 1900 delivery, No. 1 Foundry, \$25 to \$25.25; No. 2 X, \$23.75 to \$24; No. 2 Plain, \$22.25 to \$22.75, and Gray Forge, \$19.75 to \$20. Southern brands are quoted: No. 1 Foundry, \$24 to \$24.50; No. 2 Foundry, \$22.25 to \$22.50; No. 1 Soft, \$22 to \$22.25; No. 2 Soft, \$21 to \$21.25; No. 3 Foundry, \$20.75 to \$21.50, and Gray Forge, \$20.25 to \$20.50.

**Cast Iron Pipe.**—The first large contract for next season which is coming up is that for about 2500 tons for this city, the contractors' bids going in on the 14th inst. The large Brooklyn business has not yet come to a head. We quote, for large lots, 6-inch, \$31.50 to \$32 per short ton.

**Steel Rails.**—A lot of about 6000 tons of Steel Rails, consigned to Cuba, have been returned to this country and are seeking a buyer. The market generally is quiet, with quotations for Standard Sections remaining at \$35 at Eastern mill. Track Material is quoted 2.40c. to 2.50c. for Angle Bars and 2.65c. to 2.70c. for Spikes.

**Finished Iron and Steel.**—The market for Structural Material is quiet. The contract for the first part of the Simpson Crawford building, about 1200 tons, has been placed. The total needed will be between 4000 and 5000 tons. A large new building is to come into the market in Philadelphia. Plates are easier. We quote: Beams, 2.40c. to 2.50c.; Angles, 2.40c. to 2.45c.; Universal Mill Plates, 2.65c. to 2.75c.; Tees, 2.40c. to 2.45c.; Channels, 2.40c. to 2.50c.; Steel Plates are 2.60c. to 2.75c. for Tank, 2.75c. to 2.90c. for Shell, 3.10c. to 3.20c. for Flange, 3.25c. to 3.40c. for Fire Box, 3.75c. to 4c. for Locomotive Fire Box, on dock. Charcoal Iron Plates are 3.10c. for C. H. No. 1, 3.60c. for Flange, and 4.10c. for Fire Box. Refined Bars are 2.20c. to 2.25c. and Common Bars are 2c. to 2.10c., on dock. Soft Steel Bars, 2.45c. to 2.50c.; Hoops, 2.70c. to 2.75c., base, delivered.

**Merchant Pipe.**—Quotations on Merchant Pipe in carloads are 50, 10 and 10 per cent. discount, delivered, and in less than carloads 50 and 10 per cent., f.o.b. maker's mill. On Casing the figures are: For carload lots, S. and S. Joint, 37½ per cent.; Inserted Joint, 32½ per cent.; for less than carload lots, S. and S. Joint, 32½ per cent., and for Inserted Joint, 27½ per cent., less 5 per cent. to jobbers, the prices for carload lots being delivered and for less than carload lots f.o.b. mill. On Boiler Tubes, 1½ to 2½ inch, the prices are 55 per cent. off on Steel and 50 per cent. on Iron; for Boiler Tubes, 2¾-inch and larger, 55 per cent. on Steel and 52½ per cent. on Iron, all subject to 5 per cent. on car lots, the prices for carload lots being delivered and on less than carload lots f.o.b. mill.

## Metal Market.

Office of *The Iron Age*, 232-238 William street, {  
NEW YORK, December 6, 1899. }

**Pig Tin.**—The market is very weak and the demand is poor. What little demand exists is freely met by sellers. At the close to day the market was quoted 27c. to 27½c. for spot and 26¾c. to 27c. for later delivery. London closed £12 45s. for spot and futures with an easy tendency. This price is almost £2 lower than the figure quoted last week. Arrivals during the month of November were very small, amounting to only 844 tons.

The total statistics for Europe and the United States as compiled by the New York Metal Exchange show:

	Tons.
Total visible supply December 1, 1899.....	19,072
Against supply November 1, 1899.....	18,156
Against supply December 1, 1898.....	21,703

The total visible supply on December 1 last was therefore 2631 tons below that of December 1 of the year previous.

**Copper.**—The market is dull and very little business is doing. Quotations are nominally unchanged at 17c. to 17¼c. for Lake and 16¾c. to 17c. for Electrolytic and Casting Stock. London is quiet and quotations are lower, with £73 7s. 6d. for spot and £72 7s. 6d. for three months' futures. Best Selected declined to £78, a drop of £1 5s since last week.

The exports of domestic Copper from Atlantic ports during the month of November amounted to 9522 tons.

During the same month the following arrived at New York and Baltimore:

From Europe.....	3,687 tons copper.
From Mexico.....	556 tons copper.
From British Columbia.....	126 tons matte.
From Mexico.....	45 tons matte.
From South America.....	22 tons ores.

Since January 1, 1899, the total exports, exclusive of Southern ports, for November, amount to 96,731 tons; against same period in 1898, 118,704 tons.

**Pig Lead.**—Spot continues to be very scarce. The position was strong throughout the entire week. Spot is said to have sold as high as 4.80c., with 4.70c. bid and 4.80c. asked. Futures are, however, a little lower, with prices 4.60c. to 4.65c. The price of the American Smelting & Refining Company is still unchanged, with 4.60c. for New York shipments and 4.50c., St. Louis. London has declined 5 shillings and is quoted to day £17 5s. St. Louis is firm at 4.50c. to 4.52½c.

**Spelter.**—There is little of moment going on at present in the line of transactions. Prices have, however, advanced about 30 points above the lowest figure. Closing prices to-day are 4.67½c. to 4.72½c. for spot, while futures are selling at from 2½ to 10 points higher, according to delivery. St. Louis is quoted firmer at 4.40c., while the London market has advanced from the lowest point of £19 15s. to £20 to-day. Ores are said to be selling at \$30 per ton.

**Antimony.**—Is unchanged. Cookson's is quoted 10½c. to 11c. and Hallett's 9¾c.

**Nickel.**—Is firm and unchanged, with prices ranging from 40c. to 45c., according to quantity and delivery.

**Tin Plates.**—There is no change. The prices quoted by the American Tin Plate Company are on a basis of \$4.84 per box of 100 lb. Cokes, New York, or \$4.65 f.o.b. mill.

## Consolidation of the Pullman and Wagner Companies.

The consolidation of Pullman's Palace Car Company and the Wagner Palace Car Company into one concern was ratified on Tuesday at a special meeting in Chicago of the stockholders of the Pullman Company, called for the purpose of expressing approval or disapproval of the action of the recent meeting of the directors in taking steps looking toward the merging of the two corporations. Nearly every share of stock in the Pullman Company was represented at the meeting, and the action of the Board of Directors was approved by practically a unanimous vote. In approving the action of the directors the stockholders voted to increase the capital stock of the Pullman Company from \$54,000,000 to \$74,000,000, the increase to be for the purpose of purchasing the property of the Wagner Palace Car Company. It was also voted to change the name of the company from Pullman's Palace Car Company to the Pullman Company. An increase in the number of the directors from seven to eleven was also voted and the following directors elected to the board: William K. Vanderbilt, J. Pierpont Morgan, Frederick W. Vanderbilt and W. Seward Webb.



## QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING DECEMBER 6, 1899.

Cap'l Issued.		Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday
\$29,000,000	Am. Car & Foundry, Common..	3,155	.....	16½-17½	16½-16½	16 -16½	.....	15½-15½
29,000,000	Am. Car & Fy, Pref. (7½ Non-Cu.)	3,357	.....	-62½	-62½	62 -62½	61½-62½	61 -61½
19,000,000	Am. Steel Hoop, Common.....	14,470	.....	47½-48	47½-47½	46½-47½	46½-47	42½-46
14,000,000	Am. Steel Hoop, Pref. (7½ Cu.)	5,500	.....	-85	-85	-84½	83 -84½	81½-83½
50,000,000	Am. S. & W., Common.....	43,853	.....	49 -49½	49 -49½	47½-49½	46½-48	43½-46½
40,000,000	Am. S. & W., Pref. (7½ Cu.)....	4,255	.....	95 -95½	-95½	-95½	95 -95½	93½-95
28,000,000	Am. Tin Plate, Common, N. Y..	7,948	.....	-34½	34½-34½	32½-33½	32 -33	28½-32
18,000,000	Am. Tin Plate, Pref., N. Y. (7½ Cu.)	3,798	.....	-83½	-83½	-83	-82	75 -81
7,500,000	Bethlehem Iron.....	150	.....	-59½	-59½	.....	.....	.....
15,000,000	Beth. Steel, Par \$50, \$1 paid in.	200	.....	.....	.....	.....	.....	-18
7,974,550	Cambria Iron, Phila.....	641	.....	-44½	-44½	44 -44½	44 -44½	-44
16,000,000	Cambria Steel**.....	4,449	.....	22½-23½	23½-23½	22 -22½	21½-22½	20½-21½
11,000,000	Col. Fuel and Iron.....	12,435	.....	53 -55½	54½-56	54½-56	53½-55	52½-54½
46,484,300	Federal Steel, Common.....	140,289	.....	61½-62½	62½-62½	61 -63½	59½-61½	58½-60½
58,253,500	Federal Steel, Pref. (6½ Non-Cu.)	14,927	.....	81½-82	81½-82	81 -82	80½-81	79 -80½
32,000,000	National Steel, Common, N. Y..	11,955	.....	-48	-48½	46½-48	45½-47½	41 -45½
27,000,000	Nat'l Steel, Pref., N. Y. (7½ Cu.)	1,647	.....	-95	.....	.....	94 -94½	93 -94
5,000,000	Penna., Common, Phila.....	1,768	.....	85 -90	-89	-90	-88½	.....
1,500,000	Penna., Pref., Phila.....	1,305	.....	91 -95½	-95½	95½-99	.....	.....
12,500,000	Pressed Steel, Common.....	590	.....	-59	.....	58 -58½	-58½	56 -56½
12,500,000	Pressed Steel, Pref. (7½ Non-Cu.)	960	.....	-90	-89½	-89½	-89	-89½
27,352,000	Republic Iron & Steel, Common.	7,905	.....	24½-25	24½-25	24½-25½	24 -24½	23½-24
20,852,000	Repub. Iron & Steel, Pref. (7½ Cu.)	1,985	.....	70½-71	-70½	-70½	-70	69 -69½
20,000,000	Tennessee Coal and Iron.....	11,010	.....	115 -116½	115½-116	113½-114	112½-113½	112 -113½
1,500,000	Warwick Iron & Steel (par \$10)	3,297	.....	-10	-10	9½-10	9½-10	-10

\* Par \$50. \*\* \$1.50 per share paid in. † 6 % guaranteed by Beth. Steel Co. Late Philadelphia sales by telegraph.

**Bonded Indebtedness:** Am. S. & W., \$130,656; Am. Tin Plate, none; Am. Steel Hoop, none; Cambria Iron Co., \$2,000,000 6 % debenture 20-year bonds, 1917, payable option 5 years, assumed by Cambria Steel Co.; Federal Steel Co., \$13,300,000 Illinois 5 % \$7,417,000 E. J. E. R. R. 5 % \$1,000,000 Johnson 6 % \$6,732,000 D. & I. R. R. 5 % \$1,000,000 2d D. & I. R. R. 6 % \$10,000 land grant D. & I. R. R. 5 %; National Steel, \$2,610,000 6 %; Tennessee C. I. & R. R. Co., \$3,367,000 6 % \$1,114,000 7 % \$1,000,000 7 % cu. pref.; Pennsylvania Steel, \$1,000,000 6 % Steelton 1st 1917, \$2,400,000 5 % Sparrow's Point 1st 1922, \$4,000,000 consolidated, both plants; Bethlehem Iron, \$1,351,000 5 % maturing 1907. Interest and principal guaranteed by Bethlehem Steel Co. Republic Iron & Steel, none; Warwick Iron & Steel, none. Colorado Fuel & Iron Co.: Col. Fuel Co. Gen. Mort. 6 % \$880,000, Col. Coal & Iron Co. Mort. 6 % \$2,810,000, Col. Fuel & Iron Gen. Mort. 5 % \$2,303,000. Also outstanding \$2,000,000 preferred stock with accumulated dividends of \$640,000 to June 30, 1899.

## Iron and Industrial Stocks.

The continued uncertainty in regard to the money market, and the uneasiness created by the decision of the United States Supreme Court in the Addyston case have been responsible for a sharp attack on industrials generally and upon the steel stocks in particular. It has seemed almost useless to explain that the case of the old combination among a number of Southern and Western cast iron pipe companies is very different from that of the present industrial consolidations. Even the present United States Cast Iron Pipe & Foundry Company are an entirely different organization, although the members of the old combination are now merged with other concerns in the actual consolidation. The old company were a trade combination, which did handle business in a peculiar manner.

Among the principal sufferers in to-day's decline in the steel stocks was American Steel & Wire, which at one time sold down to 43½ for the common and 93½ for the preferred, Steel Hoop, common, which fell off to 42½, recovering to 45½, Tin Plate to 28½ for the common, and 75 for the preferred, and National Steel, which reached 41 and 93 as the lowest points. All of them recovered the greater part of the loss at the close.

	Bid.	Asked.
International Silver, common.....	12	14
Otis Elevator, common.....	25	27
Otis Elevator, preferred.....	92	94
H. R. Worthington, preferred.....	108	109
Cramp's Shipyard stock.....	68	78
Pratt & Whitney, common.....	3½	5
Pratt & Whitney, preferred.....	50	54
E. W. Bliss, common.....	132	.....
E. W. Bliss, preferred.....	125	.....
U. S. Projectile.....	95	100
Barney & Smith Car, common.....	21	25
Barney & Smith Car, preferred.....	94	100
International Pump, common.....	16	18
International Pump, preferred.....	65	67
Diamond State Steel.....	5½	6
Tidewater Steel.....	15½	15½
Sloss & Sheffield Steel & Iron, common.....	36	37
Sloss & Sheffield Steel & Iron, Preferred.....	74	74½
National Tube, subscriptions, common.....	47	48
National Tube, subscriptions, preferred.....	95	95½
American Bicycle Company, common.....	15	20
American Bicycle Company, preferred.....	50	60
American Bicycle Company, bonds.....	90	92

The New York Belting & Packing Company have drawn \$19,100 of their bonds for redemption. Payment will be made after January 1 at the Knickerbocker Trust Company, at \$533.50 per \$100.

The American Steel Casting Company of Chester, Pa., have declared a semi-annual dividend of 3½ per cent. on their preferred stock, payable December 20. Books close December 8 and reopen December 21.

The directors of the Pittsburgh Stove & Range Company have declared the initial quarterly dividend of 1½ per cent. on the preferred stock, payable December 28. The disbursement will be \$17,500.

Judge Gary of the Federal Steel Company is quoted as having made the following statement: "The Minnesota Iron Company will next year produce about 3,500,000 tons of ore. The price for this ore has been fixed at \$5.50

per ton. The price this year has been \$2.50 to \$3 per ton. The Duluth & Iron Range Railroad will haul during this year about 4,000,000 tons, but next year about 5,000,000 tons. Our steamship lines will carry next year upward of 2,000,000 tons. The rate this year was 80 cents a ton, for next year it has been fixed at \$1.25 per ton. The company will manufacture 1,500,000 tons of coke next year as against 750,000 tons this year. The price at the ovens this year was \$1.50 per ton, next year the price will be from \$2.75 to \$3 per ton. It will manufacture upward of 2,000,000 tons of finished product, for which the price has increased over this year from 75 per cent. to 100 per cent. per ton. Of this product we have already contracted to sell about 1,400,000 tons next year." It is unfortunate that the necessary qualifications were not made, since the impression naturally created is that the Federal Steel Company will make all the profits indicated. If the Minnesota Iron Company get an advance of \$2.50 to \$3 per ton on their ore, then the cast of that part of it which the Illinois and Lorain steel companies must use is increased by that amount. If the rates of freight on ore have been advanced 45 cents per ton, it is the Federal Steel Company who must pay it. The advance in coke similarly offsets by increased cost just so much of the advance on the finished material which the constituent companies of the Federal Steel Company sell. It is quite evident from Judge Gary's own figures that the company will still need to buy considerable outside coke, and will be forced to charter outside vessel tonnage. The company, too, will be forced to purchase outside hard and high grade ores at an advance. We cannot see that the advance in raw materials is of any special benefit to the company, except that it places in a disadvantageous position, relatively, those competitors who do not command their own supplies, and in their own territory the principal ones have well taken care of themselves in that regard.

Augustus Miller, for 33 years general superintendent of the Pottstown Iron Company's plant at Pottstown, Pa., has resigned.

In an item regarding the awarding of contracts by the Navy Department printed in *The Iron Age* last week, it was stated that the building of one of the new 3500-ton steel cruisers had been confided to the Fall River Engine Company of Fall River, Mass., instead of the Fore River Engine Company of Weymouth, Mass., which is the title of the concern to whom the contract was awarded.

It is reported that the recently chartered National Tin Plate Company of Wheeling, W. Va., will either erect a large plant or will lease the Rogers process, of which they own the patent rights, to some other concern. The patentee and the incorporators of the new company assert that the experiments with their process have proved it to be a success. Tin Plates made by the Rogers process, it is said, are now being produced at the mills of the Whitaker Iron Company in Wheeling.

## MANUFACTURING.

### Iron and Steel.

A majority of the stockholders and directors in the New Haven and Susquehanna Iron companies have agreed to consolidate in a new concern, to be called the Atlantic Iron & Steel Company, which will soon be incorporated with a capital of \$10,000,000. The greater part of the stock will be absorbed by the stockholders of the New Haven and Susquehanna companies. The new consolidation are to build a pipe mill at Columbia, in order to market their product of skelp in that form.

The Cambria Steel Company of Johnstown are making preparations to build ten large open hearth furnaces. The plant is to be laid out for an ultimate equipment of 40 furnaces.

At Pittsburgh the account of David McK. Lloyd, receiver of the Spang Steel & Iron Company, who are being wound up, has been presented to court, and is to come up for approval December 23.

The Penn Bridge Company of Beaver Falls, Pa., are erecting the steel work shipped from Alexandria, Ind., for the Bessemer plant now going up at the Brown-Bonnell plant of the Republic Iron & Steel Company, at Youngstown, Ohio.

Among the concerns recently incorporated under the laws of New Jersey are the Iron Gate Furnace Company, with a capital of \$100,000; the Roanoke Furnace Company, with a capital of \$500,000, and the Virginia Rolling Mill, with a capital of \$200,000.

Work has been commenced on the third blast furnace to be built by the National Steel Company, at Youngstown, Ohio. The Wm. B. Pollock Company have the contract for the stack and other iron work, while the Enterprise Boiler Company have the contract for the iron work for the stoves.

The Premier steel plant at Indianapolis, Ind., which has been idle for several years, and was looked upon as unlikely to be again put in operation, is now being repaired, and will shortly be in working condition. It will be operated by the Pittsburgh Steel Company, whose offices are in the Lewis Building, Pittsburgh. The company have received 60 carloads of material for the operation of the plant. They are employing a large number of men in repairing the open hearth and blooming mill departments, with the intention of manufacturing basic steel billets, blooms and slabs. H. B. Miller is general manager.

The Cherokee Furnace of Cedartown, Ga., operated by the Alabama & Georgia Iron Company of that place; is expected to go in blast about December 20.

The Hussey-Truxall Steel Company of Pittsburgh have been incorporated with a nominal capital of \$1000. The incorporators are Ephraim Truxall, C. G. Hussey, J. S. Speer, Jr., J. D. Scott, O. P. Curran, Jr., H. E. Barlow and J. P. McCord. This concern have bought from Howe, Brown & Co., Limited, of Pittsburgh, the cold rolled steel plant formerly operated by them at New Kensington, Pa., and will equip the plant for the manufacture of agricultural shapes.

It is reported that a new blast furnace is to be built at West Middlesex, Pa., by some Pittsburgh and Cleveland parties.

### Machinery.

The United Boiler Company, who recently built a plant at Girard, Ohio, have put a force of men to work on a number of contracts for boilers and blast furnace work.

A new malleable casting foundry is to be located at South Bend, Ind., under the direction of E. T. Mauzy, formerly of the Moline Wagon Company. It is reported that the Studebakers will be interested.

We are officially advised that the report that the Lewis Foundry & Machine Company of Pittsburgh would build a new plant on Neville Island, near that city, is untrue.

The McNeil Boiler Company of Akron, Ohio, builders of Cook vertical water tube boilers, have recently taken orders through their Pittsburgh office, W. M. Kerr, manager, for 2400 horse-power Cook boilers, erected in one battery and equipped with automatic furnaces, for the National Tube Company, McKeesport, Pa.; 500 horse-power for the Wheeling Steel & Iron Company, and 150 horse-power for the Republic Iron Works of the National Tube Company, Pittsburgh.

The Enterprise Foundry Company, Belleville, Ill., are adding a building, 60 x 80 feet, to their foundry, and are also constructing a two-story warehouse, 30 x 76 feet. Their stove and machine castings departments are exceedingly busy, and the new structures were made necessary to handle the increasing trade.

The Boston Blower Company, Hyde Park, Mass., advise us that they are unusually busy, having made the largest shipments during the month of November of any month in the history of the concern. Among the more important heating and ventilating apparatus installed are the following: Liberty Wall Paper Company, Schuylerville, N. Y.; Standard Silk Company, Phillipsburg, N. J.; Prentice Bros. Company, Worcester, Mass.; Benjamin Eastwood Company, Paterson, N. J.; Brown & Sharpe, Providence, R. I.; Structural Iron Works, Baltimore, Md.

The Mahoning Foundry & Machine Company, Youngstown, Ohio, have been incorporated with a capital stock of \$25,000. The incorporators are Geo. M. McKelvey, L. E. Cochran, Frank

D. Runser and Mason Evans. The new concern will engage in the manufacture of wrought iron and steel castings in various forms, and will take over the present business interests of the Mahoning Foundry & Machine Company, whose plant is located at 23-25 North Watt street, in Youngstown. The concern advise us that they have a good class of work in the shops, and are in position to give prompt delivery on any work. Officials have been elected as follows: Frank D. Runser, president; Mason Evans, vice-president, and Fred G. Evans, secretary and treasurer.

The machine department of the plant of the Hydraulic Machine Company, in Lawrenceville, Pittsburgh, was destroyed by fire last week, causing a loss estimated at \$20,000. The burned portion of the plant will be rebuilt as fast as possible.

### A Defense Association in the Machinery Trade.

On last Monday evening the second meeting of the Metal Trades Association was held at the Waldorf-Astoria Hotel, New York. Plans for the permanent organization of the association were perfected, and a number of manufacturers who are non members were in attendance to have unfolded to them the plans of the organization. It is said that this association consists of manufacturers who employ machinists. The association will aim to establish equitable relations between employers and their employees for the protection of both interests. In other words, it will seek to protect its members against or meet the existing unions of the employees much on the lines of the Stove Founders' Association and the National Foundrymen's Association. William H. Pfahler, secretary of the Abraham Cox Stove Company of Philadelphia, delivered an address explaining the lines on which the Stove Founders' Association operated and illustrating the benefits derived from the association of the members.

The first meeting, at which the Metal Trades Association was really formed, was held at Munchenheim's, Thirty-first street, near Broadway, New York, on August 25. In a letter sent to the trade at that time by H. N. Covell of the Lidgerwood Mfg. Company, and signed by H. R. Worthington, the E. W. Bliss Company and the Lidgerwood Mfg. Company, the following was embodied: "The universal agitation now going on in labor circles would indicate that united action on the part of employers is extremely desirable, especially in view of the very satisfactory results attained by the foundry interests through their association in its dealings with the molders."

This extract indicates the purpose of the newly formed association. We are informed that A. J. Caldwell of the H. R. Worthington Company is secretary of the new association. Among the concerns who are said to be identified with the project, besides those already mentioned, are the De La Vergne Refrigerating Machine Company and Manning, Maxwell & Moore.

### The Mutoscope for Showing Machinery in Motion.

Judging from present indications the time is not far distant when moving pictures will figure to a considerable extent in the selling of machinery. During the last few days Frederick Courtenay Barber, manager of the Commercial Display Department of the American Mutoscope & Biograph Company, 841 Broadway, New York, has interested several large machinery merchants with the device which is to bring this about. The apparatus is called the canvassing mutoscope, and its object is to show machinery and appliances in actual operation. The canvassing mutoscope is a moving picture machine about as large as a good sized camera. It presents views about the size of a cabinet photograph, and each picture appears to be a part of one continuous photograph of the machine represented, with every movement reproduced as in operation. The mechanism of the apparatus is precisely similar to that of the "nickel in the slot" machines which are exhibited in almost every city in this country. The canvassing mutoscope is, however, portable, and is operated by hand.

**The Sheet Mill Combination.**—It is probable that an attempt will be made at an early date to take up actively the matter of forming a combination of the sheet mills, which project was dropped when the options given to parties representing Judge W. H. Moore of Chicago expired on November 1. It is understood that a committee consisting of J. G. Battelle of the Cincinnati Corrugating Company, Piqua, Ohio; A. M. Brown of the Cambridge Iron & Steel Company, Cambridge, Ohio, and B. M. Caldwell of the Aetna-Standard Iron & Steel Company, Bridgeport, Ohio, has been appointed to draft a plan by which the sheet mills can be brought into a combination of some kind by which the present demoralized condition of the market can be remedied. This committee might be termed Ways and Means Committee, and are doing the preliminary work before a general meeting is called.



## PERSONAL.

S. H. Stupakoff, for some years general superintendent of the Union Switch & Signal Company of Pittsburgh, has resigned his position to accept a similar one with the Pennsylvania Malleable Company, who are erecting a large plant at McKee's Rocks, Pa. Mr. Stupakoff was presented with a silver service by the employees of the Union Switch & Signal Company upon terminating his connection with that concern.

John O'Donovan, formerly with the Carnegie Steel Company, Limited, of Pittsburgh, has been appointed manager of the Sharon works of the American Steel Casting Company, Sharon, Pa.

F. M. Grammar, who was formerly with the Duquesne furnace plant and with the Lackawanna Iron & Steel Company at Lebanon, Pa., has resigned to take charge of the blast furnaces of the Colorado Fuel & Iron Company at Pueblo, Col.

H. Orcott, one of the leading mechanical engineers attached to the large machine shops of Ludwig Loewe & Co. of Berlin, Germany, and H. Herlitzki of White, Child & Beney of Vienna, one of the largest importing houses handling American machine tools in Austria, sailed last week for Europe by the "Kaiser Wilhelm der Grosse."

E. B. Fay, recently with the Union Bridge Works, has associated himself with W. G. Brenneke under the firm name of Brenneke & Fay, with offices at 1000 Fullerton Building, St. Louis. They are civil engineers and contractors and agents for the Pittsburgh Bridge Company.

John W. Galvin, superintendent of the open hearth department of the Illinois Steel Company, has resigned to take charge of the new plant of the Peru Steel Casting Company, Peru, Ind. His son, John E. Galvin, who has been night superintendent at the first named works, goes with him as assistant superintendent.

A. W. Spencer, formerly chemist and sales agent with the Harbison & Walker Company of Pittsburgh, has resumed his old position.

Lew A. Anshutz, formerly of the Tremont Stove Works of Anshutz, Bradberry Company, Pittsburgh, Pa., but which were absorbed by the Pittsburgh Stove & Range Company, is now connected with J. C. Bartlett of 623 624 Liberty street, Pittsburgh, Pa.

Guy S. Rinebolt of Cleveland, Ohio, has been appointed superintendent of the Lima Steel Company's plant at Lima, Ohio.

W. C. Brewer, formerly with the Shelby Steel Tube Company of Toledo, Ohio, has been appointed general manager of the Heckert-Baltzley Billet Company, whose plant at Finley, Ohio, will shortly be started up.

G. R. Dunell, who has been in this country for some time studying American machinery and steel plants as a special correspondent of the London *Times*, returned to England last week. We understand that his letters will begin on his arrival.

Benjamin Thaw, president of the Hecla Coke Company of Pittsburgh, is critically ill, and his recovery is very doubtful.

Charles J. Clark, banker, and identified with several large business interests at Pittsburgh, is dead. Mr. Clark was injured last week in a runaway accident in Schenley Park and never regained consciousness.

Max Daunert, American representative of Schuchardt & Schutte, has just returned from a short business trip abroad.

## The New York Machinery Market.

Office of *The Iron Age*, 232-238 William street,  
NEW YORK, December 6, 1899.

In the tone of the market there is no change. Business is as good as can be expected at this season of the year. During the last fortnight demand has quieted down slightly, but business has been so very brisk lately that the slightest falling off becomes quite noticeable. The consensus of reports received in the trade shows that business now is actually better than it has been during the corresponding period of any year for some time back. As has been the case during the last few weeks, transactions throughout the last week were rather small, but numerous. We have not heard of any large individual deals having been consummated in the machinery district. Prices remain practically unchanged. In a few instances manufacturers have stiffened up a little in their lists on certain specialties, but this, we understand, was done simply to correct unevenness which previously existed in the lists. While in the smaller and medium sizes of machine tools the stocks in the various warehouses and showrooms in this city are kept pretty well up, the

heavier classes of tools continue to grow scarcer. The builders of planers don't seem to be able to catch up at all. Owing to the increased number of new makes of shapers these tools are, apparently, becoming quite plentiful. The old standard makes of shapers are seldom to be seen in stock, however, and with the universal types the builders are still considerably behind in delivery. In fact most of the high class and high priced tools are still very scarce. The demand from abroad is said to have increased considerably within the last week or so. We are informed that the depression of foreign industrial stocks which existed in Europe about a month ago has been overcome, and that confidence has been restored. Consequently numerous projected enterprises which were temporarily hung up will soon be launched. There are a number of such projects on foot in Russia, Italy and France. We have not heard that any of the large English electrical concerns have begun purchasing for their new plants.

The Compania Minera F. y A. of Monterey, Mexico, will doubtless conduct a considerable amount of purchasing with American houses. This company, who have conducted a large smelting business in Monterey for a number of years, are erecting large refineries to be operated in connection with their present works. The refineries are to have a capacity of 100 tons of lead, gold and silver per day. Heretofore this company have always sent the argentiferous bullion to this country to be refined. The contracts for the buildings, which will be steel construction throughout, have been awarded to the Pittsburgh Bridge Company of Pittsburgh, Pa. We understand that none of the equipment has been ordered as yet. The purchasing will be done from the main offices of the company, which are at Monterey, Mexico. The buildings will be lighted electrically, and the motive power used throughout the works will be either electricity or compressed air. The plant was designed by A. F. Schneider of 77 Pine street, New York, who has also been retained as consulting engineer by the company.

There is a report on the street to the effect that Wm. R. Trigg & Co., who were awarded one of the cruisers given out last week by the Navy Department, will build an addition to their works at Richmond, Va. This company are in possession of the old Richmond Locomotive Works. The works were recently converted into ship-building yards, and it is said that the whole plant will be enlarged considerably, besides the erection of iron foundries and rolling mills. It is thought that owing to the amount of work which they now have under way it will be quite necessary for the Trigg Company to enlarge their plant in order to complete the cruiser "Galveston" within the time specified, which was 24 months.

It is quite evident that an extensive addition of some kind will be built to the plant of the Whitestone Forge & Construction Company, at Whitestone, L. I. One report has it that William Cramp & Sons Ship & Engine Building Company of Philadelphia and the Union Iron Works of San Francisco have combined to build a shipbuilding plant adjoining the forge works, while another well informed party states that a steel plant will be built in addition to the present works.

An addition will be built to the Detroit plant of the Solvay Process Company of Syracuse, N. Y.

There is talk about a new sewing machine plant to be built at West Huntsville, Ala. The new company are said to be the No-Treadle Sewing Machine Company. It is said that the plant will cost about \$300,000.

It is expected that contracts will be given out shortly for the building and equipment of an electric railway for the Kohala & Hilo Railway Company of Honolulu, H. I. The road is to cost about \$2,500,000 and is to be about 130 miles in length. Louis Edwin Bomiessler of 27 Pine street, who is the attorney for the company, stated that the equipment will be purchased very shortly.

The Philadelphia & Westchester Traction Company of Llanerch, Pa., awarded a contract to Hooven, Owens & Rentschler Company for two 650 horse power Hamilton Corliss engines. They will be direct connected to Westinghouse generators. The contract was awarded through Ford, Bacon & Davis of 149 Broadway.

The contract for the steel power house for the James River Construction Company of Richmond, Va., has been awarded to the Riter-Conley Mfg. Company of 39 and 41 Cortlandt street and Pittsburgh. We have not heard that the engines and boilers have been ordered as yet.

The Riter-Conley Mfg. Company have received a contract from the Auburn-Hudson Railway & Power Company of Velatie, N. Y., for a \$35,000 steel stand pipe.

The Commercial Construction Company of 1 Madison avenue are placing contracts for the equipment of a new brewery. The brewery is being built by the Central Brewing Company. It will be located on the East River, foot of Sixty-eighth street, New York. The contracts for the lighting plant have been awarded. The Buffalo Forge Company of 39 and 41 Cortlandt street will furnish the engines and the Northern Engineering Company of 39 and 41 Cortlandt street will supply the generators.

## The Chicago and Northwest Machinery Market.

Office of *The Iron Age*, 805 Fisher Building, (CHICAGO, December 4, 1899.)

No indications are yet observed of a declining demand for machinery. Builders of engines, mining machinery, saw mill machinery, machine tools and manufacturers of all kinds of power appliances, as well as makers of miscellaneous machinery, are crowded with work, with no prospect of its early diminution. The volume of business in November was larger than in any previous month, and December opens with a most encouraging feeling in every direction. The demand for railroad equipment is causing car builders and railroad companies to steadily purchase additional machinery to be used in this line. The agricultural implement manufacturers are constantly increasing their factory facilities. Continued drafts are being made on the machine tool warehouses in Chicago, and stocks are consequently growing smaller, with builders of such tools as greatly in arrears as ever in making deliveries. It is observed that a specially sharp demand for machine tools is coming from manufacturers who need increased facilities to get out orders which they have booked, and are therefore buying tools as they find them, but are not inclined to place orders for future delivery. At present the pressure is for immediate wants, and the future is largely left to take care of itself. In this connection the fact is noted that comparatively few new machine shops are starting, fewer, indeed, than during the recent hard times. More small outfits were then sold to mechanics who had been thrown out of work, and therefore started in business for themselves. Everybody can now find employment who is qualified to run a lathe or other tool, good wages and steady work making such positions more desirable than running a small implement shop. It might seem natural under existing conditions that new capital would venture in this field, but no developments of any importance are occurring in this direction. In the list of new corporations now being authorized by the different States very few machinery companies are seen. The great demand for machine tools has come during this period of activity in trade from old fashioned concerns who are improving their facilities.

Interviews with many members of the machinery trade disclose the important fact that very few are anticipating a reduction in business or a falling off in the demand on account of the approaching end of the year. The rush seems too great for the usual seasonable dullness to have any effect. The following detailed information, obtained from such a great variety of sources, will be read with interest:

The Chicago Pneumatic Tool Company and the Standard Pneumatic Tool Company, both of Chicago, officially notify all their customers and the trade in general that in the patent litigation entered into between the Chicago Pneumatic Tool Company, Joseph Boyer, the Standard Pneumatic Tool Company and the Chouteau Mfg. Company, all suits have been dismissed by the advice of their respective attorneys, they recognizing that the Boyer and Chouteau patents cover the fundamental principles of all pneumatic hammers, without the combined use of which no successful pneumatic hammer can be made. Recognizing the value of their respective claims, they have purchased licenses from each other covering their present style of hammers. They consider this action necessary for the protection of users of their respective tools.

The Edward P. Allis Company, Milwaukee, Wis., notice no diminution in the amount of business offering. They are just beginning to receive benefit from a 200-foot extension to one of their iron foundries, and have begun work on a new machine shop 80 x 200 feet. Among the orders of interest received in November is one for a triple expansion engine for the Mechanical Laboratory of the Russian Imperial Technical School at Moscow. This engine will be similar to those supplied to several of the leading technical schools of this country. This business came entirely unsolicited, as the result of the investigation of certain Russian engineers who have visited this country and discovered that the Allis engines were looked upon as standard. The Warwick Iron & Steel Company of Pottstown, Pa., have ordered two vertical cross compound blowing engines with 84 inch air cylinders. The amount of business to be secured seems to be still governed by manufacturers' capacity.

The Gates Iron Works, Chicago, say the conditions which have prevailed during the summer continue without the slightest evidence of abatement in activity. They never before have known in November anything like the same number of important enterprises maturing into orders as at this time. In the complete cessation of orders from South Africa, which orders have hitherto played an important part in their business at this time of year, they naturally expected a marked falling off in volume, and have been agreeably surprised, therefore, to receive within the last month some unusually large orders for mining machinery. Orders of this kind, where the machinery is to go into the West and Northwest of the United States, have usually been held up until nearer spring time, but several orders of this class have matured this month, with urgent instructions to ship as soon as the goods could be produced, regardless of the winter months. Another encouraging feature of their trade has been the number and size of crushing plants for making railroad ballast, which they take as an evidence that the ballasting of railroads in 1900 will proceed to an extent hitherto unknown. A third feature, equally significant, is the booking of most extraordinary orders for large iron ore crushing plants. A considerable portion of this class of orders comes from the South. Tennessee and Alabama will make new records in 1900 in the production of pig iron. The same is true of Michigan, Wisconsin and Minnesota. The gigantic preparations being made to mine iron ore point unmistakably to a volume of production which will simply astonish the world. The people of the United States are used to big things, and have come to expect them. The enormous tonnage of pig iron in 1899 is already an old story here, but when the United States goes into the European market next year with its iron there will be a sensation on the other side of the Atlantic. The whole situation is very satisfactory.

J. H. Kerrick, Minneapolis, Minn., reports trade for the month of November larger than any previous month in the year. Orders have been received from Texas for two carloads of machinery, for one from Connecticut, two from Michigan, two from Wisconsin, three from Minnesota, and several other good sized broken shipments from other places. No let up is seen in the demand for machinery. Building goes on as rapidly as ever, and a great deal of talk is heard about putting in new factories at different points, such as saw mills, sash and door factories, barrel factories, hoop machine works and factories for wagons and agricultural implements. Collections were never better, and cash sales are the majority.

The Hofer Mfg. Company, Freeport, Ill., report their business constantly increasing. The past month they have been more crowded with orders than before. Their 20-inch drill, which they have fitted with lever, wheel, self feed and automatic stop, is finding a ready sale. They are placing in the market a 22½ inch drill, and expect to have a 25-inch drill by the first of the year. They have recently received several orders, amounting to over \$5000, for furniture spring machinery, both in this and in foreign countries. They are shipping a 16-spindle boring machine, 14 feet between the centers of outside drills, to the Emerson Mfg. Company of Rockford. This is perhaps the largest boring machine of the kind now built, and is a very convenient tool. Since moving into their new quarters last February they have more than doubled their force.

The Witte Iron Works Company, manufacturers of gas and gasoline engines, Kansas City, Mo., say the only complaint they can make is that they cannot get wrought steel in any shape or form, and at the present time it is crippling all lines of trade. Business otherwise is good, and would be far better if they could deliver the goods.

The Shaw Electric Crane Company, Muskegon, Mich., say their November trade was very satisfactory. The number of orders taken considerably exceeded those taken in either October or September. Buyers realize the condition of all manufacturing institutions, and do not refuse to consider propositions contemplating deliveries a long time ahead. Two months ago this was not the case. Inquiries are still coming in as freely as ever. One of the noticeable features of their business is the much larger proportion of heavy cranes ordered than formerly.

Wickes Brothers, Saginaw, Mich., have found an increasing volume of inquiries and orders, the distribution of which is general, covering almost the entire country, with special activity in the lumber districts, stimulated by the present comparatively high prices of lumber and other wood products. In this department one sale of especial interest is a 52 inch heavy belt driven gang saw mill for the Northwestern Lumber Company, Eau Claire, Wis. In the boiler line they are doing an immense business, and a few sales of note are as follows: Postum Cereal Company, Battle Creek, Mich., 500 horse power of the firm's new vertical water tube boilers; Saginaw Valley Traction Company, Saginaw, Mich., two 300 horse-power boilers of the same kind; Penobscot Mine, Hibbing, Minn., 800 horse-power boilers of the same type; Mitchell Bros., Cadillac, Mich., 500 horse-power of verti-



cal water tube boilers, this being their third order; Cummer Lumber Company, Jacksonville, Fla., one 250 horsepower horizontal water tube boiler, this being their sixth order. In the boiler shop tool line is noted a sale to the Heipershausen Bros., New York City, of a set of vertical plate bending rolls to bend 2-inch plate 12 feet wide; also a set of 18 foot horizontal plate bending rolls to the Chicago & Northwestern Railway Company of Chicago. The tendency to withhold orders awaiting a drop in prices is not nearly so evident as a few months ago, and a large proportion of the orders listed is for entirely new construction.

Charter Gas Engine Company, Sterling, Ill., had an exceedingly favorable and satisfactory business during November. Carload orders were booked for shipment to different points in the United States that are thousands of miles apart. They say it is more a question with them of filling than of getting orders.

The Fred W. Wolf Company, manufacturers of the Linde ice making and refrigerating machines, beet sugar machinery, &c., Chicago, have made important sales during the month. Their ammonia fitting and ice factory supply departments are receiving a great many orders, and the outlook for the coming year is exceedingly encouraging.

Pawling & Harnischfeger, Milwaukee, Wis., found a volume of business for November keeping well up with the average of the preceding months, and the large number of inquiries they are receiving indicates a continuance of satisfactory trade conditions. Among orders received in November are the following: Three-ton double trolley electric traveling crane and 10-ton standard electric traveling crane for Wellsville Plate & Sheet Iron Company, Wellsville, Ohio; 15-ton electric traveling crane for Crescent Steel Company, Pittsburgh, Pa.; 25-ton electric traveling crane for Birmingham Machine & Foundry Company, Birmingham, Ala.; 25-ton electric traveling crane for the Edward P. Allis Company, Milwaukee, Wis.; 30-ton electric traveling crane for Atlanta Railway & Power Company, Atlanta, Ga.; 5-ton traveling crane for Westinghouse Air Brake Company, Pittsburgh, Pa.; 30-ton traveling crane for Midvale Steel Company, Philadelphia, Pa.

The Vilter Mfg. Company, Milwaukee, Wis., are greatly pleased with their November business, which has been the best for several months. They have secured heavy orders in the packing house industry, including a fine contract for refrigerating machinery and Corliss engines from the Cudahy Packing Company, for their packing houses at Kansas City, and a large contract for refrigerating machinery and Corliss engines from the International Packing Company, Sioux City, Iowa, all of which are compounds excepting one. In addition to these they have secured many orders for their improved Corliss engines of large proportions. All of these orders are for home trade excepting an ice plant for export. Inquiries continue to pour in, and they are kept busy making estimates. They continue to operate their works day and night.

The American Well Works, Aurora, Ill., report business fully up to the standard, and to the full extent of their capacity, and see no reason why there should be a let up during the winter months, which, however, they generally consider their off months.

The S. Freeman & Sons Mfg. Company, Racine, Wis., say their trade for November was very satisfactory. Among the notable orders taken during the month were 16 72-inch by 18-foot boilers in one contract and six of the same size in another.

The Marshall & Husehart Machinery Company, Chicago, have been appointed Western sales agents for the Bullard Machine Tool Company, Bridgeport, Conn., manufacturers of upright boring mills, engine and turret lathes and large screw machines. They report an extremely good business for the month of November, falling but a little below October, which was a record breaker for this establishment. Much more business could have been done in November if it had been possible to make deliveries as desired. They observe quite a demand for tools from manufacturers who are so crowded with work that they need more facilities to fill their hurried orders. Buyers of this kind, of course, are not inclined to place orders for future delivery. They are looking at present conditions, and not taking chances on the future. The company recently received a fine export order covering a number of heavy tools.

The Pearson Machine Company, Chicago, are still running their plant to its full capacity, having recently been obliged to add more tools to keep up with their orders. More than half of their output is being exported. An important feature of their business is the strong demand for their standard tools. They are no longer required to build special machines, as was the case when business was depressed and they were glad to get any kind of work to keep their force together.

J. B. Doan & Co., Chicago, enjoyed a larger business in November than in the previous month. They received

a nice order from the United States Government for an outfit to go to the Philippine Islands, consisting of lathes, shapers and drills for a shop in Manila to do general repair work. They report trade increasing with automobile manufacturers, but they find the demand light from bicycle makers. Among recent orders of good size booked from local buyers they mention sales to Fraser & Chalmers and the McCormick Harvesting Machine Company.

McDowell, Stocker & Co., Chicago, report a fair demand for machine tools the past month, comparing very favorably with the course of trade in October. Their business covered no large outfits, but was of a pick up character. They are pleased with the steady condition of business, which is what they have been desiring for years.

Hill, Clarke & Co., Chicago, did a larger business in November than in any previous month. They received a number of fine orders and their warehouse is now carrying smaller stocks than ever. Some manufacturers are making a little better delivery on contracts, but others are still far in arrears. They find trade coming quite regularly from many lines of manufacturing, but especially from electrical concerns and from manufacturers of harvesting machines. They look for an equally large business in December, as they are figuring on several important inquiries with strong chances in favor of securing them.

Chas. H. Besly & Co., Chicago, say that the past month was the biggest month they ever had, taking their business in the aggregate. The demand was well distributed through all lines of goods. Their export trade is still an important part of their business. They received a cablegram last week for five machines, which were shipped a few days after. They are running their factory to its utmost capacity, and are now at work on some new machines which will soon be on the market. They note as a feature of their store trade that they are having an unusually heavy demand for vises. This means the general extension of shops and that more men are being put to work. They put their sales of vises at ten times the average in recent years. They are not looking for a falling off in December business, as their customers are buying all the time.

The Armstrong Bros. Tool Company, Chicago, say the demand for Armstrong tool holders has increased by such great strides during the year now drawing to a close that they are filled with astonishment when they compare sales for November, 1899, with the corresponding month of last year. Each month of the current year has shown a substantial gain in sales over the month preceding, and November, 1899, stands forth as the biggest month in all their experience. The future promises to sustain the advance which they have made. They are busy keeping up with orders and getting in shape to turn out a number of new tools which promise to substantially increase the popularity of their line of tools and the aggregate of sales. Among the more widely known concerns which have lately sent large orders are the Mason Machine Works of Taunton, Mass., the Joliet works of the Illinois Steel Company, and Potter & Johnston of Pawtucket, R. I. The United States Navy Department are sending orders with great regularity, constantly increasing the number of their tools in use in the different Government shops. Although the new tools above referred to will not be ready for delivery before January 1, they have on their books advance orders aggregating 1000 tools. Among those who have ordered these tools to be shipped "as soon as ready" are the Grand Trunk Railway system, Montreal, Canada, and the Ingersoll-Sergeant Drill Company, Easton, Pa. Their exhibit of tools at the International Exposition at Philadelphia has given most gratifying returns, and they are confident that their exhibit at Paris next year will result in a large increase in their already heavy export trade.

The Manistee Iron Works Company, Manistee, Mich., find no material change, except that as the big consolidations are taking hold of various industries it in some cases puts a stop to improvements and additions to existing plants. They have just received an order for a 10-foot vacuum pan for the Ohio Salt Company, a duplicate of one made for them a year ago which has proved very satisfactory. The situation of the Manistee Company in the midst of the largest salt fields puts them in the best possible position for working out excellent results in salt making, and they are getting the plants to build. They recently employed Robt. W. Gray, 290 Rush street, Chicago, who formerly represented the Blake & Knowles pumps in Chicago for a number of years, to look after outside inquiries, particularly in their pump department, and are working up quite an improved trade for pumps, both large and small.

The American Steam Pump Company, Battle Creek, Mich., say their business for November averaged as well as during other months of the past year, and for the year 1899, as compared with 1897, will show an increase of 100 per cent., and as compared with 1898 will show an increase of 60 per cent. Their foreign trade is constantly increasing, and they are now exporting about 50 per cent.

of their product. They have expended this year in improving their plant about \$30,000. They look for a good trade in 1900, and believe that prices will be fairly well maintained, although they think they can see indications of a lower range of prices for some kinds of raw material, including iron.

The Whiting Foundry Equipment Company, Harvey, Ill., state that the large volume of business with which they have been favored for some time past still continues. They have received many orders from the West, and have also made numerous sales throughout the State of Pennsylvania.

The Stover Mfg. Company, Freeport, Ill., report that their trade has been unusually large. They are considerably behind orders in nearly all departments. They have been forced to advance prices on account of the continued rise in price of materials, but have not made as much increase as material men have in their prices.

The New Doty Mfg. Company, Janesville, Wis., say business during November was as good as any previous month, and they have ahead of them about as much work as at any time during the past eight months. They are receiving more inquiries than during September and October, and think that everything indicates a continuance of busy times for some months.

The Standard Pneumatic Tool Company, Chicago, have made a large number of good shipments recently, particularly to the Southwest, as also to Germany, France and Russia. They find an ever increasing demand for their Little Giant pneumatic tools and appliances abroad, and the foreign business thus far has surpassed their most sanguine expectations. The prospects for the coming year are very favorable indeed, both as regards domestic and foreign trade. They note some complaint among their customers, who are anxious to order a great number of pneumatic tools to fulfill their requirements, on account of the failure of the various air compressor companies to deliver compressors when promised, which, as will be readily understood, inconveniences them considerably. They have greatly increased their capacity, and are in a position to fill all orders for pneumatic tools promptly.

Perry Ransom, Oshkosh, Wis., says trade still remains brisk. The price on grinding machinery, it is believed, will not raise any materially for the next few months, although several advances have been necessary during the summer. Among orders taken during the past month were many for disk grinders, some to go to Germany. The new pulley polishing machine is proving a good seller.

Rudolphi & Krummel, Chicago, say November did not show any falling off in orders, as had been expected on account of the approach of the end of the year. Orders have covered mostly regular machines for manufacturing tinware and enameled ware. A number of foreign orders for bicycle tools seem to indicate a partial revival of the cycle industry abroad, the domestic demand for these machines being very limited. The difficulties experienced in obtaining forgings and material have disappeared.

The B. F. Barnes Machine Company are building a plant at Rockford, Ill., for the manufacture of lathes, drill presses and other machine tools. They will have substantial brick structures one story high, the machine shop to be 50 x 73 feet, the foundry 56 x 72 feet and the core room 20 x 40 feet.

The Bucyrus Company, South Milwaukee, Wis., have recently put up two large extensions to their plant, and as a consequence are prepared to make a very much larger output during the coming year. They are crowded with orders, and their shops are being operated night and day. They have been endeavoring to catch up with the work on their steam shovels, but up to this time have not been able to do so, as sales have been faster than they could get the machines out. They hope, however, with their increased facilities, to be able to take care of all the work that is offered to them.

The Ott Gas Engine Works, Chicago, report their business for November unusually large, coming from all directions. Orders for railway water station material were larger for November than for any other month of the year. The open weather has been very favorable, and made this class of work last much later than usual. The use of gasoline engines for pumping water has multiplied so rapidly that the company find it hard to take care of the trade offered them.

**The Wellman Fore Hearth.**—The Wellman fore hearth, a recent improvement introduced in connection with open hearth furnaces by the Wellman-Seaver Engineering Company of Cleveland, Ohio, has successfully undergone its first test at the Ensley plant of the Tennessee Coal, Iron & Railroad Company. Its principal function is to permit of casting the steel direct into the molds without the intervention of a ladle. When the second heat was cast at Ensley there was trouble with the stopper, and the furnace was turned back to make repairs. When again turned down for casting the metal flowed too freely again and threatened very serious trouble. A train

of molds was pushed along under the flow and the electric locomotive suffered somewhat. Still, the whole heat was taken out, the amount of steel lost being only about 2 tons, when in the ordinary ladle practice it would have been possible to save very little of it. One very interesting and highly valuable advantage of the fore hearth has developed which was altogether unexpected by the inventor. The slag is usually a very troublesome feature in the usual ladle practice, sticking to the ladle and flowing with difficulty. With the fore hearth the greatest part of the slag is kept in the furnace, and when the steel has been cast that quantity which has entered the fore hearth may be returned to the furnace by tilting it back. Thus the entire slag of the charge is in a highly heated and fluid condition, and after a brief delay may be cast into a ladle car and thence run out to the dump and discharged as completely and as cheaply as is done with blast furnace cinder.

## The "Pipe Trust" Decision.

### The Views of the United States Supreme Court on the Old Combination.

WASHINGTON, D. C., December 5, 1899.—The decision in the so-called Addyston Pipe Trust case, which has been awaited for a long period, was handed down by the United States Supreme Court yesterday and was adverse to the combination. The constitutionality of the combination to regulate the price of pipe by mutual agreement was at issue, and a careful distinction was drawn by the court between combinations affecting interstate commerce and those applying to transactions within one State only.

Justice Peckham, who handed down the decision, made a very exhaustive statement of the case and described in minute detail the operations of the combination, which embraced the Addyston Pipe & Steel Company of Cincinnati, Dennis Long & Co. of Louisville, the Howard Harrison Iron Company of Bessemer, Ala.; the Anniston Pipe & Foundry Company of Anniston, Ala.; the South Pittsburg Iron Works of South Pittsburg, Tenn., and the Chattanooga Foundry & Pipe Works of Chattanooga, Tenn. The court stated that the proceedings had been instituted under the anti-trust act of 1890, an injunction being sought to prevent the corporations engaged in the manufacture of water and gas pipe which composed the combination from continuing to do business under the agreement by which they had divided the territory of the United States among themselves and by which they had arranged to fix prices. Under this agreement the court said that the members of the combination provided for auctioning off the right to make bids for supplying with pipe cities not in allotted territory, the successful bidder to meet no opposition from other members of the trust, or if other bids were made none of them should be lower than that of the company to whom the award had been made by the combination. In cases where bids were asked in territory allotted to members of the combination, the agreement was that no bids should be made except under the supervision of the company in charge of that territory under the agreement.

"The charge," said the court, "was that such a combination was a violation of the clause of the Constitution regulating interstate commerce. The District Court of the Eastern District of Tennessee, in which the case was first heard, refused to take this view of it, but it was reversed by the Court of Appeals of the Sixth Circuit, which held the combination to be antagonistic to the Constitution and ordering the issuance of the injunction prayed for."

This latter decision was affirmed by the action yesterday of the Supreme Court, with a modification that the decision should be construed as applying to interstate business only.

The case at issue presented two questions in the opinion of the court; the first, whether the constitutional clause for the regulation of interstate commerce applied to individuals and corporations, and the second, whether, if the clause should be found to so apply, the combination was a regulation of interstate commerce. Taking these points up in order the court said:

"Assuming, for the purpose of the argument, that the contract in question herein does directly and substantially operate as a restraint upon and as a regulation of interstate commerce, it is yet insisted by the appellants at the threshold of the inquiry that by the true construction of the Constitution the power of Congress to regulate interstate commerce is limited to its protection from acts of interference by State legislation or by means of regulations made under the authority of the State by some political subdivision thereof, including also Congressional power over common carriers, elevator, gas and water companies, for reasons stated to be peculiar to such carriers and companies, but that it does not include the general power to interfere with or prohibit private contracts between citizens, even though such contracts have



interstate commerce for their object, and result in a direct and substantial obstruction to or regulation of that commerce.

"This argument is founded upon the assertion that the reason for vesting in Congress the power to regulate commerce was to insure uniformity of regulation against conflicting and discriminating State legislation, and the further assertion that the Constitution guarantees liberty of private contract to the citizen, at least upon commercial subjects, and to that extent the guarantee operates as a limitation on the power of Congress to regulate commerce. Some remarks are quoted from the opinions of Chief Justice Marshall, in *Gibbons vs. Ogden* (9 Wheat. 1), &c., all of which are to the effect that the object of vesting in Congress the power to regulate interstate commerce was to insure uniformity of regulation against conflicting and discriminating State legislation. The further remark is quoted from *Railroad Company vs. Richmond* (*supra*) that the power of Congress to regulate commerce was never intended to be exercised so as to interfere with private contracts not designed at the time they were made to create impediments to such commerce. It is added that the proof herein shows that the contract in this case was not so designed.

"The reasons which may have caused the framers of the Constitution to repose the power to regulate interstate commerce in Congress do not, however, affect or limit the extent of the power itself.

"In *Gibbons vs. Ogden* (*supra*) the power was declared to be complete in itself, and to acknowledge no limitations other than are prescribed by the Constitution.

"Under this grant of power to Congress that body, in our judgment, may enact such legislation as shall declare void and prohibit the performance of any contract between individuals or corporations where the natural and direct effect of such a contract will be, when carried out, to directly, and not as a mere incident to other and innocent purposes, regulate to any substantial extent interstate commerce. (And when we speak of interstate we also include in our meaning foreign commerce.) We do not assent to the correctness of the proposition that the constitutional guarantee of liberty to the individual to enter into private contracts limits the power of Congress and prevents it from legislating upon the subject of contracts of the class mentioned.

"The power to regulate interstate commerce is, as stated by Chief Justice Marshall, full and complete in Congress, and there is no limitation to the grant of the power which excludes private contracts of the nature in question from the jurisdiction of that body. Nor is any limitation contained in that other clause of the Constitution which provides that no person shall be deprived of life, liberty or property without due process of law. It has been held that the word liberty, as used in the Constitution, was not to be confined to the mere liberty of person, but included among others a right to enter into certain classes of contracts for the purpose of enabling the citizen to carry on his business. (*Allgeyer vs. Louisiana*, 165 U. S. 578; *United States vs. Joint Traffic Association*, 171 Id. 505, 572.) But it has never been, and in our opinion ought not to be, held that the word included the right of an individual to enter into private contracts upon all subjects, no matter what their nature and wholly irrespective (among other things) of the fact that they would if performed result in the regulation of interstate commerce and in the violation of an act of Congress upon that subject. The provision in the Constitution does not, as we believe, exclude Congress from legislating with regard to contracts of the above nature while in the exercise of its constitutional right to regulate commerce among the States. On the contrary we think the provision regarding the liberty of the citizen is to some extent limited by the commerce clause of the Constitution, and that the power of Congress to regulate interstate commerce comprises the right to enact a law prohibiting the citizen from entering into those private contracts which directly and substantially, and not merely indirectly, remotely, incidentally and collaterally, regulate to a greater or less degree commerce among the States.

"We cannot so enlarge the scope of the language of the Constitution regarding the liberty of the citizen as to hold that it includes or that it was intended to include a right to make a contract which in fact restrained and regulated interstate commerce, notwithstanding Congress, proceeding under the constitutional provision giving to it the power to regulate that commerce, had prohibited such contracts.

"While unfriendly or discriminating legislation of the several States may have been the chief cause for granting to Congress the sole power to regulate interstate commerce, yet we fail to find in the language of the grant any such limitation of that power as would exclude Congress from legislating on the subject and prohibiting those private contracts which would directly and substantially, and not as a mere incident, regulate interstate commerce.

"If certain kinds of private contracts do directly, as already stated, limit or restrain and hence regulate inter-

state commerce, why should not the power of Congress reach those contracts just the same as if the legislation of some State had enacted the provisions contained in them? The private contracts may in truth be as far reaching in their effect upon interstate commerce as would the legislation of a single State of the same character.

"We conclude that the plain language of the grant to Congress of power to regulate commerce among the several States includes power to legislate upon the subject of those contracts in respect to interstate or foreign commerce which directly affect and regulate that commerce, and we can find no reasonable ground for asserting that the constitutional provision as to the liberty of the individual limits the extent of that power as claimed by the appellants. We therefore think the appellants have failed in their contention upon this branch of the subject.

"We are thus brought to the question whether the contract or combination proved in this case is one which is either a direct restraint or a regulation of commerce among the several States or with foreign nations contrary to the act of Congress. It is objected on the part of the appellants that even if it affected interstate commerce the contract or combination was only a reasonable restraint upon the ruinous competition among themselves, and was formed only for the purpose of protecting the parties thereto in securing prices for their product that were fair and reasonable to themselves and the public. It is further objected that the agreement does not come within the act because it is not one which amounts to a regulation of interstate commerce, as it has no direct bearing upon or relation to that commerce, but that on the contrary the case herein involves the same principles which were under consideration in *United States vs. E. C. Knight Company* (156 U. S. 1), and in accordance with that decision the bill should be dismissed.

"Referring to the first of these objections to the maintenance of the proceeding we are of opinion that the agreement or combination was not one which simply secured for its members fair and reasonable prices for the article dealt in by them. Even if the objection thus set up would, if well founded in fact, constitute a defense we agree with the Circuit Court of Appeals in its statement of the special facts upon this branch of the case and with its opinion thereon as set forth by Circuit Judge Taft.

"The facts thus set forth show conclusively that the effect of the combination was to enhance prices beyond a sum which was reasonable, and therefore the first objection above set forth need not be further noticed.

"We are also of opinion that the direct effect of the agreement or combination is to regulate interstate commerce, and the case is therefore not covered by that of *United States vs. E. C. Knight Company* (*supra*). It was there held that although the American Sugar Refining Company, by means of the combination referred to, had obtained a practical monopoly of the business of manufacturing sugar, yet the act of Congress did not touch the case, because the combination only related to manufacture and not to commerce among the States or with foreign nations. The plain distinction between manufacture and commerce was pointed out and it was observed that a contract or combination which directly related to manufacture only was not brought within the purview of the act, although as an indirect and incidental result of such combination commerce among the States might be thereafter somewhat affected.

"While no particular contract regarding the furnishing of pipe and the price for which it should be furnished was in the contemplation of the parties to the combination at the time of its formation, yet it was their intention, as it was the purpose of the combination, to directly and by means of such combination increase the price for which all contracts for the delivery of pipe within the territory above described should be made, and the latter result was to be achieved by abolishing all competition between the parties to the combination. The direct and immediate result of the combination was therefore necessarily a restraint upon interstate commerce in respect of articles manufactured by any of the parties to it to be transported beyond the State in which they were made. The defendants, by reason of this combination and agreement, could only send their goods out of the State in which they were manufactured for sale and delivery in another State upon the terms and pursuant to the provisions of such combination. As pertinently asked by the court below, was not this a direct restraint upon interstate commerce in those goods?

"If dealers in any commodity agreed among themselves that any particular territory bounded by State lines should be furnished with such commodity by certain members only of the combination and the others would abstain from business in that territory, would not such agreement be regarded as one in restraint of interstate commerce? If the price of the commodity were thereby enhanced (as it naturally would be) the character of the agreement would be still more clearly one in restraint of trade. Is there any substantial difference where by agreement among themselves the parties chose one of their number

to make a bid for the supply of the pipe for delivery in another State and agree that all the other bids shall be for a larger sum, thus practically restricting all but the member agreed upon from any attempt to supply the demand for the pipe or to enter into competition for the business? Does not an agreement or combination of that kind restrain interstate trade, and when Congress has acted by the passage of a statute like the one under consideration does not such a contract clearly violate that statute?

"As has been frequently said, interstate commerce consists of intercourse and traffic between the citizens or inhabitants of different States and includes not only the transportation of persons and property and the navigation of public waters for that purpose, but also the purchase, sale and exchange of commodities. (*Gloucester Ferry Company vs. Pennsylvania*, 114 U. S., 196-203; *Kidd vs. Pearson*, 128 Id., 1, 20.) If therefore an agreement or combination directly restrains not alone the manufacture but the purchase, sale or exchange of the manufactured commodity among the several States, it is brought within the provisions of the statute. The power to regulate such commerce—that is, the power to prescribe the rules by which it shall be governed—is vested in Congress, and when Congress has enacted a statute such as the one in question any agreement or combination which directly operates, not alone upon the manufacture but upon the sale, transportation and delivery of an article of interstate commerce by preventing or restricting its sale, &c., thereby regulates interstate commerce to that extent, and to the same extent trenches upon the power of the national Legislature and violates the statute. We think it plain that this contract or combination affects the result.

"We have no doubt that where the direct and immediate effect of a contract or combination among particular dealers in a commodity is to destroy competition between them and others, so that the parties to the contract or combination may obtain increased prices for themselves, such contract or combination amounts to a restraint of trade in the commodity, even though contracts to buy such commodity at the enhanced price are continually being made. Total suppression of the trade in the commodity is not necessary in order to render the combination one in restraint of trade. It is the effect of the combination in limiting and restricting the right of each of the members to transact business in the ordinary way as well as its effect upon the volume or extent of the dealing in the commodity that is regarded. All the facts and circumstances are, however, to be considered in order to determine the fundamental question—whether the necessary effect of the combination is to restrain interstate commerce.

"If iron pipe cost \$100 a ton instead of the prices which the record shows were paid for it no one, we think, would contend that the trade in it would amount to as much as if the lower prices prevailed. The higher price would operate as a direct restraint upon the trade, and therefore any contract or combination which enhanced the price might in some degree restrain the trade in the article. It is not material that the combination did not prevent the letting of any particular contract. Such was not its purpose. On the contrary, the more contracts to be let the better for the combination. It was formed not for the object of preventing the letting of contracts but to restrain the parties to it from competing for contracts, and thereby to enhance the prices to be obtained for the pipe dealt in by those parties. And when by reason of the combination a particular contract may have been obtained for one of the parties thereto, but at a higher price than would otherwise have been paid, the charge that the combination was one in restraint of trade is not answered by the statement that the particular contract was in truth obtained and not prevented. The parties to such a combination might realize more profit by the higher prices they would secure than they could earn by doing more work at a much less price. The question is as to the effect of such combination upon the trade in the article, and if that effect be to destroy competition and thus advance the price the combination is one in restraint of trade.

"Decisions regarding the validity of taxation by or under State authority, involving sometimes the question of the point of time that an article intended for transportation beyond the State ceases to be governed exclusively by the domestic law and begins to be governed and protected by the national law of commercial regulation, are not of very close application here. The commodity may not have commenced its journey and so may still be completely within the jurisdiction of the State for purposes of State taxation, and yet at that same time the commodity may have been sold for delivery in another State. Any combination among dealers in that kind of commodity, which in its direct and immediate effect forecloses all competition and enhances the purchase price for which such commodity would otherwise be delivered at its destination in another State, would, in our opinion, be one in restraint of trade or commerce among the States, even

though the article to be transported and delivered in another State were still taxable at its place of manufacture.

"It is said that a particular business must be distinguished from its mere subjects, and from the instruments by which the business is carried on; that in most cases of a large manufacturing company it could only be carried on by shipping products from one State to another, and that the business of such an establishment would be related to interstate commerce only incidentally and indirectly. This proposition we are not called upon to deny. It is not, however, relevant. Where the contract is for the sale of the article and for its delivery in another State, the transaction is one of interstate commerce, although the vendor may have also agreed to manufacture it in order to fulfill his contract of sale. In such case a combination of this character would be properly called a combination in restraint of interstate commerce, and not one relating only to manufacture.

"It is almost needless to add that we do not hold that every private enterprise which may be carried on chiefly or in part by means of interstate shipments is therefore to be regarded as so related to interstate commerce as to come within the regulating power of Congress. Such enterprises may be of the same nature as the manufacturing of refined sugar in the *Knight* case—that is, the parties may be engaged as manufacturers of a commodity which they thereafter intend at some time to sell, and possibly to sell in another State; but such sale we have already held is an incident to and not the direct result of the manufacture, and so is not a regulation of or an illegal interference with interstate commerce. That principle is not affected by anything herein decided.

"The views above expressed lead generally to an affirmance of the judgment of the Court of Appeals. In one aspect, however, that judgment is too broad in its terms—the injunction is too absolute in its directions—as it may be construed as applying equally to commerce wholly within a State as well as to that which is interstate or international only. This was probably an inadvertence merely. Although the jurisdiction of Congress over commerce among the States is full and complete, it is not questioned that it has none over that which is wholly within a State, and therefore none over combinations or agreements so far as they relate to a restraint of such trade or commerce. It does not acquire any jurisdiction over that part of a combination or agreement which relates to commerce wholly within a State by reason of the fact that the combination also covers and regulates commerce which is interstate. The latter it can regulate, while the former is subject alone to the jurisdiction of the State. The combination herein described covers both commerce which is wholly within the State and also that which is interstate.

"In regard to such of these defendants as might reside and carry on business in the same State where the pipe provided for in any particular contract was to be delivered, the sale, transportation and delivery of the pipe by them under that contract would be a transaction wholly within the State, and the statute would not be applicable to them in that case. They might make any combination they chose with reference to the proposed contract, although it should happen that some non-resident of the State eventually obtained it.

"The fact that the proposal called for the delivery of pipe in the same State where some of the defendants resided and carried on their business would be sufficient, so far as the act of Congress is concerned, to permit those defendants to combine as they might choose, in regard to the proposed contract for the delivery of the pipe, and that right would not be affected by the fact that the contract might be subsequently awarded to some one outside the State as the lowest bidder. In brief, their right to combine in regard to a proposal for pipe deliverable in their own State could not be reached by the Federal power derived from the commerce clause in the Constitution.

"To the extent that the present decree includes in its scope the enjoining of defendants thus situated from combining in regard to contracts for selling pipe in their own State, it is modified, and limited to that portion of the combination or agreement which is interstate in its character. As thus modified the decree is affirmed."

W. L. C.

**Information Wanted.**—Who produces machinery for making matches?

Who are the manufacturers of cutting off machines that use a plain disk at high speed instead of a circular saw?

A correspondent wishes to know where a machine can be obtained for the purpose of coating sheet steel with paint by power.

Who has for sale second hand box machinery for the manufacture of hard wood boxes?



# HARDWARE.

## Condition of Trade.

**F**ACTORIES continue in most cases fully occupied on orders, which in many lines are sufficient to keep them busy for some time. In this condition of things they are disposed to regard the present lull in buying as a relief from the heavy pressure to which they have been subjected. There is, however, a good volume of current business, and the year promises to close with a satisfactory trade. Jobbers generally are busy supplying the requirements made upon them by the retail trade, and winter and holiday goods are in special request. The mild weather which has prevailed has kept back somewhat the demand for Sleds, Skates, Coal Hods, &c., but the sale has been very satisfactory. The prosperity which is so generally prevalent is indicated in more liberal orders for fine goods and articles in the line of luxuries than has been the case for several years past, and the prospect is that trade in holiday specialties will be exceptionally large. Prices for some of the cruder products which lie near the raw material are giving signs of slight weakness, and orders have been placed at figures which a few weeks ago were not obtainable. The market on the whole continues strong. Export business, notwithstanding high prices on a few lines, is excellent, but some trade is being lost on account of the inability of manufacturers to meet foreign competition at ruling prices. This would be the case very frequently were it not that manufacturers endeavor to avoid unnecessary advances in their export business and make lower prices to foreign than to domestic buyers. The retail trade are beginning to show more caution than heretofore in purchasing goods, as they do not wish to be caught with heavy stocks in case a decline should occur.

### Chicago.

(By Telegraph.)

Belated orders are coming in for winter goods caused by the sharp, cold snap of the past few days. Good advance orders are also being placed for Poultry Netting, Wire Cloth, Steel Goods, and other seasonable merchandise for the spring trade. The movement in other respects shows some falling off, as is to be expected this month. Nevertheless, the volume of business is still considerably in excess of that usually occurring in December. The general trade has been active much longer this year than for many years. Heavy Hardware jobbers report a fair movement, with a particularly strong demand for Horseshoes, caused by freezing weather. Orders for most goods, however, have shown some falling off, and conditions may be expected to become more and more quiet with the approach of the close of the year.

### St. Louis.

(By Telegraph.)

December sales are adding to the year's good record in general Hardware lines. Orders arriving for spring goods are considered marvelous. The past few days of crisp, wintry weather have stimulated demand for seasonable goods in every branch of commerce. The next three weeks will determine volume of this season's business in Sleds, Skates and Sleigh Bells. Sleds are selling

exceptionally well, due largely to the cleaning up of stock last season, when winter extended beyond usual limit. The early demand for Skates and Sleigh Bells was heavy, slackening up, however, as higher temperature continued. The Southern trade laid in good stocks of heating Stoves, prompted by bitter cold of last season. Stove Pipe, Elbows and Dampers orders have exceeded estimate, and jobbers have had to reorder stocks to satisfy buyers. Poultry Netting and Screen Wire Cloth figure largely in present call for spring goods. Builders' Hardware is still in active movement. Shipments of new stocks to Texas speak well of its prosperity and business opportunities. Advances mentioned this week embrace 2 shillings per hundred weight on Peter Wright's Anvils, following the recent 50 cents advance on American Anvils; loose Grindstones, \$1 per ton; Mounted Grindstones, about 10 per cent.; Bale Ties, 10 per cent. Edge Tools, Hammers and Saws are in remarkably good sale, and trade in all kinds of Tools is in advance of expectations, considering time of year. In Heavy Hardware circles a full average business is being done. Most of the houses are taking account of stock. Sales are somewhat restricted, but the demand always falls off near the close of the year. Some parties who have large stocks of goods purchased on old contracts appear to be selling at less than market prices, but no large concessions have been made, as there is apparently nothing in the future to justify any decided cut. The market is firm, and in some lines the manufacturers are withdrawing prices and advancing them on many leading articles. Prices of Iron, Steel, and all kindred goods are remarkably firm, considering existing conditions. There has been a slight decline in prices of Sheets and Plates, due, it is said, largely to delivery in large quantities of Sheet Bars to the mills on contracts for the closing year. The prospects never were better than at present for future trade, a large number of inquiries being made continually for deliveries in the early part of 1900.

### Louisville.

**W. B. BELKNAP & Co.**—The market presents few new features since our last report. The extremely conservative buying on the part of jobbers, dealers and those carrying stocks still continues, and this is one more element of strength in the situation. For the fact remains that the mills have been well employed despite this reduced volume of new business which has prevailed for nearly 60 days. Of course it means that the period of buying for the needful replenishing of stocks will come that much sooner. The activity in the railroads and construction of various kinds is conspiring to uphold prices, and the difficulty of getting special orders filled is still a prominent characteristic.

It may be that the new year may not bring the bulge in the volume that in some quarters is predicted for it. But, then, when people are predicting both ways not everybody can be right.

*The Iron Age's* report of the National Hardware Association meeting in Pittsburgh is most satisfactory, and has been highly commended by the membership. The entertainment at Pittsburgh was on such a broad scale that it will be hard ever again to equal it; and we doubt if it would be wise to attempt such rivalry. We get together strictly for business, and with a view to promote what is best in business, not only among the Hardware dealers, but as between them and the manufacturers, the constant aim and desire being to come at a better understanding of what conduces to the mutual interest of both,

believing that there is an interdependence which cannot be ignored.

With such talks as were given by Mr. Graham, Mr. Baird, Mr. Lupton, Mr. Clark and others in a similar strain, every member of the association went away feeling buoyed up, if not with a hope for the perpetuation of market conditions of to-day, at least with the idea that the manufacturers understood us, and we understood them, better than ever before. Events happen so rapidly that we are sure within another year we shall want to meet just these same gentlemen, along with their coadjutors, to throw still more light on the situation as it shall have developed during that period. Meanwhile we bespeak their individual advices from time to time, as may be suggested to themselves.

Possibly the point of the 2 per cent. cash discount, for which the convention held out strongly, was not brought out by the public prints as clearly as it might have been. The point made and the resolution passed was in effect that the 2 per cent. cash discount should not be considered as a measure of bank, or market rate, for money borrowed, but as a premium for prompt settlement of accounts, acting also, thereby, as an insurance against loss which was worth paying for. As transactions become more scattered, amounts smaller and the financial conditions of customers less well known, this premium seems to us desirable. We should be sorry to see the old established rule disturbed or laid aside. We know that many transactions in raw material are spot cash. If that is to be taken as the basis for the sale of the finished product, we fear that the next step might be to reduce the 30-day time to spot cash, or cash with order, or cash in advance. Do not let us push this thing *ad absurdum*.

#### Nashville.

THE GRAY & DUDLEY HARDWARE COMPANY.—The delightful Indian summer weather for the past two weeks seems to have given an impetus to all branches of trade. The farmers and planters are as busy as if it were spring, while contractors, carpenters and builders have more work than they can do.

Not only this section, but the whole South, is experiencing a greater degree of healthy prosperity than ever before. With its immense quantities of Iron, Coal and Phosphates, large lumber interests, and fertile soil, the whole Southern country gives promise of a very rich future.

Hardware of all kinds continues to move freely. Quite a number of retail dealers seem to be anticipating their wants further ahead than usual, and are placing orders now for such spring goods as Poultry Netting, Wire Cloth, Refrigerators, Freezers, &c., evidently with the idea that goods will be higher later on.

Collections are up to the standard for this season of the year.

#### Baltimore.

CARLIN & FULTON.—The present month, being the last of the year, is not generally noted for great business activity in the wholesale trade, except in such lines as are suited for the approaching holiday season, colder weather also being needed to give an impetus to the demand for certain other goods.

After a year of extraordinary change and the evolution of almost entirely new business conditions the trade will very generally start during this month taking the annual inventory, during which process there is not much desire to increase stocks. It will be with a feeling of great relief that instead of pricing one's stock at a decided discount from its original cost, as has been the rule for many years, loss from depreciation will not be a factor in the results of this year's business.

It now remains to be seen whether the advanced prices for goods (and there are others to be made yet) will curtail the demand or not. Economy, no doubt, will be the rule of the consumer, but it has been pretty much so for some time. It will greatly depend upon the farmer's ability to pay for what he actually needs.

#### Cleveland.

THE W. BINGHAM COMPANY.—Trade is keeping up remarkably well, being even larger than it was a year ago at this time. The very open fall we have been having has prevented the placing of many second orders for season goods, such as Elbows, Coal Hods, Stove Boards, &c. Packing room floors, however, show orders for a general assortment of other Hardware. That is very encouraging and indicates that retailers' stocks generally throughout the country are not abnormally large and the spring trade therefore should be good. Fence Wire seems to be the one exception, most dealers having carried it over, as farmers will not buy at present prices.

#### Philadelphia.

SUPPLEE HARDWARE COMPANY.—Trade continues without any apparent change. Wholesale houses are generally busy. Prices are firm. No complaints in regard to either trade or prices are heard upon our streets.

### Notes on Prices.

**Wire Nails.**—Demand for Wire Nails is for moderate quantities, but orders are frequent. No change has taken place in prices, and the condition of the market remains the same. Manufacturers' quotations are as follows, f.o.b. Pittsburgh, terms 30 days net:

To jobbers in carload lots.....	\$2.95
To " in less than carload lots.....	2.97½
To retailers in carload lots.....	3.10
To " in less than carload lots.....	3.20

**New York.**—The local market remains in much the same condition as last week. There is, perhaps, somewhat less of a tendency to shade quotations as stocks bought at lower figures diminish. The trade are buying sparingly as the year draws to a close. Quotations for quantities less than carloads are as follows:

To retailers, carloads on dock.....	\$3.25 to \$3.28
To " less than carloads on dock.....	\$3.30 to 3.41
Small lots from store.....	3.35 to 3.45

**Chicago, by Telegraph.**—Manufacturers report a quiet condition of trade, which they expect to continue for several weeks. They quote single carload orders on the basis of \$3.28, Chicago. Jobbers say their trade is holding up much better than had been expected. They observe an inclination among their customers to buy for stock in anticipation of spring requirements. Small lots are still held at \$3.38.

**St. Louis, by Telegraph.**—Quieter demand is had this week. A cold wave has checked outdoor operations somewhat. Prices are unchanged at \$3.33, base, St. Louis, for single cars, and \$3.43 for small lots. The court has instructed the receivers of the Continental Wire Company's works, at Granite City, Ill., to lease the plant to the Merchants' Wire & Nail Company, Laclede Building, St. Louis. This company are said to have an ample supply of Wire and Rods, and are ready to market Nails; also Painted and Galvanized Barb Wire.

**Pittsburgh.**—There is no change whatever to note in the situation in the Wire Nail market. The demand is exceedingly quiet, and there continues to be some unevenness in prices of Nails among jobbers who have stocks purchased at much lower prices than are now ruling. The large and small trade are buying only for immediate wants. We quote:

To jobbers in carload lots.....	\$2.95
To " in less than carload lots.....	2.97½
To retailers in carload lots.....	3.10
To " in less than carload lots.....	3.20

All f.o.b. Pittsburgh, terms 30 days net.

**Cut Nails.**—The price at which Steel Cut Nails are obtainable in carload lots is \$2.45 to \$2.50, with freight from Pittsburgh to point of destination added, while the nominal price is \$2.60 at Pittsburgh, with freight added. This, however, shows a somewhat firmer market than we reported last week. Demand is comparatively light, in view of the advance of the season.

**New York.**—The tone of the local Steel Cut Nail mar-



ket is somewhat stronger than last week for small lots from store. Single carloads continue to be quoted \$2.65 on dock. Small lots from store are held at \$2.70 to \$2.75. Purchases are largely confined to small lots.

*Chicago, by Telegraph.*—The demand is moderate, showing little change from previous conditions. The price of small lots is continued at \$2.80.

*St. Louis, by Telegraph.*—Manufacturers are gratified at the returning popularity of Iron Cut Nails, and jobbers verify the greater demand. Prices continue to range from \$2.75 to \$2.90, base.

*Pittsburgh.*—We are advised that the Cut Nail market has a somewhat stronger tone. Considering the season of the year, the demand can be referred to as fairly satisfactory. We quote Cut Nails at \$2.50, base, in carload lots, f.o.b. at mill, Wheeling, and \$2.60 in less than carload lots, usual terms. In exceptional cases, and for good orders, some of the Eastern mills are shading these figures.

**Barb Wire.**—Demand for Barb Wire for domestic uses continues in small volume. Quotations are unchanged but firm for domestic trade, as follows, f.o.b. Pittsburgh, net cash 30 days:

To jobbers in carload lots, Painted.....	\$3.40
"    "    "    Galvanized.....	3.55
"    "    "    in less than carload lots, Painted.....	3.42½
"    "    "    "    Galvanized.....	3.57½
To retailers in carload lots, Painted.....	3.55
"    "    "    Galvanized.....	3.70
"    "    "    in less than carload lots, Painted.....	3.65
"    "    "    "    Galvanized.....	3.80

*Chicago, by Telegraph.*—Rumors are current of the purchase of additional Wire properties by the American Steel & Wire Company. These reports are neither affirmed nor contradicted. The situation from the manufacturers' standpoint is quite satisfactory for the season. Orders from the distributing trade are of smaller quantity than some time since, and it is not expected that much change will take place in this respect for some little time. The demand from manufacturing consumers is of a healthy character, and specifications are being freely received on contracts. A large trade is anticipated in Barb Wire as the time draws near for preparations for spring to be made. Prices continue as follows: Single carloads, Plain Annealed Wire, \$3.18; Painted Barb Wire, \$3.73; Galvanized Barb Wire, \$3.88, with 10 cents advance by jobbers for small lots.

*St. Louis, by Telegraph.*—Not much doing, especially as year's end approaches. Prices are \$3.78, St. Louis, for single cars of Painted and \$3.88 for small lots, with 15 cents additional for Galvanized.

*Pittsburgh.*—The demand for Barb Wire for home consumption is very light, and some of the largest mills are doing very little. For domestic trade we quote Barb Wire at \$3.40 for Painted in carload lots to jobbers, with an advance of 15 cents for Galvanized, all f.o.b. Pittsburgh, terms 30 days net cash.

**Smooth Wire.**—The market for Smooth Wire is without any new features of interest. Demand keeps up, and prices are firm at former quotations, as follows, f.o.b. Pittsburgh, terms 30 days net cash:

To jobbers in carload lots.....	\$2.80
To "    "    "    in less than carload lots.....	2.82½
To retailers in carload lots.....	2.95
To "    "    "    in less than carload lots.....	3.05

*Pittsburgh.*—The market is firm, with good demand, considering the season of the year. There continues to be more or less unevenness in prices among jobbers who have stocks of Wire bought at lower figures than are now in force. We quote: To jobbers in carload lots, \$2.80; to jobbers in less than carload lots, \$2.82½; to retailers in carload lots, \$2.95; to retailers in less than carload lots, \$3.05, all f.o.b. Pittsburgh; terms, net 30 days. The charge for galvanizing is 50 cents on sizes from Nos. 6 to 14, inclusive; on Nos. 15 and 16, 85 cents, and on Nos. 17 and 18, \$1.10.

**Peck, Stow & Wilcox Company.**—Under date December 1 Peck, Stow & Wilcox Company, New York and Southington, Conn., issue a revised discount sheet, No. 4, applying to their 1898 catalogue. The changes which have taken place in the market since their last discount sheet was issued have called for this revision of quota-

tions, which represents current prices on their extensive line of goods.

**Glass.**—Some of the independent Window Glass factories are going into blast, and it is generally assumed that by January 1 the majority of all the factories in the country will be started. The American Window Glass Company appear to be waiting to see the outcome of the proposed jobbers' association before making any announcement regarding next year's prices. It will probably be very near the first of the year before all the details of this association will be completed. If this becomes a success there seems to be little doubt that the independents will adhere to prices adopted by the American Company. Demand from jobbers is light, and Glass is being sold by them at 80 and 10 to 80 and 20 per cent. discount, the extreme figures only being reached in exceptional cases. As Glass becomes more scarce prices will naturally stiffen. The American Window Glass Company's quotations are as follows:

Districts.	A.	B.	C.	E.
5000 boxes or more.....	85	85	85	85
Carloads ..	80 & 15	80 & 15	80 & 20	80 & 15
3000 boxes or more, ..	80 & 20	80 & 20	.....	80 & 2½
1000 boxes or more.....	.....	.....	85	.....

Prices subject to freight allowance.

**Paints and Colors.**—The action of the manufacturers of reaffirming present card prices of White Lead and extending deliveries to January 31, 1900, precludes any change in values during the balance of this year. Present prices are firmly adhered to, with light demand, at former quotations, as follows: In lots of less than 500 pounds, 6½ cents; in lots of 500 pounds and over, 6 cents.

**Oils.**—*Linseed Oil.*—The anticipated advance in the price of City Raw Linseed Oil has become a fact. On December 5 manufacturers announced the following prices: In lots of less than five barrels, 51 cents per gallon; in lots of five barrels or more, 50 cents per gallon. Boiled Linseed Oil is 2 cents per gallon higher than Raw. State and Western Oil range 2 to 3 cents lower in price than City Crushed. The stock of Oil throughout the country for prompt delivery is reported to be limited.

**Spirits Turpentine.**—The conditions of the Turpentine market during the past week have been similar to those of preceding weeks. A falling off in price has stimulated buying in large quantities, which in turn has caused an advance in prices. An increase in values of ½ cent or more has again reduced demand to small lots. The market has fluctuated 1 cent during the week, and is now quoted as follows: Southern, 51½ cents; machine made barrels, 52 cents per gallon.

## Cutlery Direct to Retail Trade.

**THE JACKSON KNIFE & SHEAR COMPANY,** manufacturers of Knives, Shears, Scissors, Razors, &c., Fremont, Ohio, are now dealing with the retail trade direct, having recently concluded to sell no more goods to exclusive jobbers except at regular prices to retail trade. They are intending to keep only enough traveling men on the road to visit the trade once a year, their soliciting being principally done by correspondence, and by submitting on approval a line of samples for inspection. This method of marketing their goods they refer to as securing a material saving to the retail Hardwareman, while placing the desirable Cutlery trade in his hands instead of in the hands of department and dry goods stores. In accordance with their plan the company invite retail merchants to send for a small sample line of Pocket Knives and Shears, say one-twelfth to one-fourth dozen each of some of their best selling numbers, to make selection from. The first lot will be sent express charges prepaid, and if the goods are not satisfactory they may be returned at the company's expense. In towns under 5000 they are ready to give exclusive sale if desired. The company emphasize the quality of their line of Pocket Cutlery and Shears, the prices of which are referred to as very low for the character of the goods.

## British Letter.

FROM A SPECIAL CORRESPONDENT.

ON January 1 next, Plimpton's Building will be ready for occupation in Old Hall street, Liverpool. The building is 120 feet broad by 80 feet deep, and is six stories high. It will be occupied by John C. Plimpton & Co., import and export American merchants—a firm who are rapidly forging to the front in every department which they handle. The growth of John C. Plimpton & Co. is a significant indication of the growth of American Hardware and kindred trades in Great Britain. There is practically no form of American Hardware which John C. Plimpton & Co. do not handle, not only for sale in Great Britain itself, but for re-export throughout Europe and the British colonies. The business was started about 16 years ago by J. C. Plimpton, himself an American, while, later on, it was strengthened by the inclusion of S. Raleigh Kirkness, an Englishman. This is a very strong combination.

I recently had an opportunity to interview Mr. Kirkness on behalf of *The Iron Age*, and I promptly seized it. After congratulating him upon his show of Cycles and accessories at the Stanley Exhibition in London, I said:

"Now, Mr. Kirkness, how do you find American goods selling over here?"

"Well, sir, we have every reason to be satisfied. The growth of our business is the best proof that American goods can sell in this country; for I may tell you that we confine ourselves to American and Canadian products."

"Tell me a few things you are selling."

"At the present moment we are very busy selling light American Agricultural Implements, Hoes, Rakes, Forks, and all that sort of thing. We have not yet started on the heavier Implements, Harvesters, &c., but now that we are ready with our new building we intend to go into that also, and I am myself going over to America very shortly to see what can be done that way. So far as Agricultural Implements are concerned, you, of course, understand that we want them not only for the British home demand, but also to meet our customers abroad. We have two travelers regularly traversing Europe, and we have representatives in Australia, India and South Africa. In all these places we can sell Agricultural Implements. I am also convinced that there is an increasing demand for American Agricultural Implements in this country."

"What else, Mr. Kirkness?"

"Well, I should say that the next biggest demand is for domestic Hardware. I draw a distinction between domestic Hardware and Saddlery Hardware, because there is no demand over here for American Saddlery Hardware. But we can sell any quantity of such goods as Wringers, Freezers, Lawn Mowers, Wood Ware and similar stock."

"I have already told the readers of *The Iron Age* about Wood Ware, Mr. Kirkness; I have said that there is a brisk demand over here for it."

"You are quite right. The only difficulty is that the American makers of Wood Ware are too independent. If they could bring themselves to believe that there is likely to be a consistently regular trade in household Wooden Ware—Buckets, Pails, Tubs, &c.—it might be more easy to fix up terms with some of our American friends in that line."

"What about Tools?"

"The demand for Tools—Bits, Brace Bits, Saws, Planes of all descriptions—is constantly on the increase. Indeed, our difficulty is to get the supply from America to meet the demand over here."

"Do you find the Canadian goods competing with American?"

"Yes, most unmistakably. It is indeed extraordinary the way Canadian manufacturers are now pushing their goods over here."

"Is there any difference in the methods as between Canadian and American?"

"No, I cannot see that there is; but just now trade in the States is brisk and remunerative, and in consequence the Americans are forgetting their export trade. Canadian trade, not being liable to the same fluctuations and growing at a steady pace, is creeping in here, while the American is busy supplying his own folk."

"Rather a pity, isn't it?"

"Oh, well, so far as we are concerned, we are quite indifferent whether we buy Canadian or American goods; but the trade boom in America won't last forever, and when the American manufacturer comes back to us again he will be sorry he ever let slip even a dollar's worth of trade."

"Are there any other lines opening up?"

"Yes; three lines have a big future before them in this country. First of all, there is a growing demand for American Electrical Appliances; secondly, American Buggies; and thirdly, American Furniture."

"And you like dealing with Americans?"

"Yes, of course I do; only I would strongly urge Americans never to let their export trade slip, even when the home demand is brisk."

"And of course you are always glad to see Americans?"

"Yes; tell your American readers when they come to Liverpool always to come in and see us. I can assure them of a hearty welcome."

### The Canadian Advance.

The reference made by Mr. Kirkness to the Canadian trade with Great Britain demands close attention from American manufacturers. The Dingley tariff has a good deal to do with it; for it has had the effect, in some degree, of transferring the center of gravity of the Atlantic trade from the American wheat districts to Manitoba. The result is that trade is being mechanically induced by the increasing purchases by Great Britain of Canadian wheat. The progressive decrease in British exports to the United States is not encouraging; for notwithstanding the progressive increase of American exports to Great Britain, it is probably true that if the decrease on the one hand were less, the increase upon the other would be enormously greater. Another cause which is operating in its own quiet way is the Canadian Preferential tariff. In 1897, before the tariff came into operation, Great Britain sent to Canada goods to the value of £5,038,138, but the period from 1898 to 1899, covered by the working of the Preferential tariff, has shown that the trade has increased to £6,178,684. It is, of course, self evident that the mechanical restrictions of any tariff, high or low, will not altogether account for great fluctuations in trade; that they have a pronounced effect cannot be disputed. Last year I was greatly impressed, in conversation with a large Toronto Hardware dealer, by his informing me that the bulk of the Hardware he was selling was actually made in Canada. It will not be many years before these Canadian Hardware products are being sold in Great Britain. I commend this point to American business men, and am quite sure if they study the question carefully they will easily find some effective method of counteracting this movement. Meantime it is interesting to observe that the Lord High Commissioner of Canada (Lord Strathcona) is busy addressing Chambers of Commerce, and in other ways pushing Canadian interests. It is also a matter of common knowledge that in the next few weeks a Commission of Canadian business men appointed by the Dominion Government will land in this country with the view of pushing Canadian trade interests in France, Belgium, Germany, Italy and Austria.

### Pig Iron and Hardware.

A few months ago Mr. Carnegie, in an interview published in London, announced that the British metal trades would find themselves severely handicapped before long for want of raw material. It has not taken long to make good his prophecy. Paucity of pig iron is now the cry of the metal market. All the stocks are shrinking daily.



Connal's, Glasgow, is being depleted at the rate of 10,000 tons a week. Put in another way, the total British production of pig iron for this year will hardly be in excess of that for 1898, roughly 9,000,000 tons. Against this must be set a greatly increased demand on the part of home users, while the British exports up to to-day are over 250,000 tons in excess of the corresponding period last year. Not only so, but the German demand is brisk, and Germany figures prominently among our foreign buyers. While, therefore, Great Britain has practically reached the limit of her productive capacity in pig iron, a recent estimate indicates that America will increase her production from 11,600,000 to 13,400,000 tons. Nor does there appear to be any evidence that the raw supply in America has anything like reached an inconvenient scarcity. The general effect on finished metal goods may not be immediately obvious; but Hardware is being forced up in price in every direction, and, if the present demand continues, it must be evident that the nation with the greatest and most expeditious supply of the raw material must finally win the race. The monetary effect of the Transvaal War will probably slacken the demand for metal goods to some extent; but, upon the other hand, many buyers are holding their stocks like grim death in the expectation of an even greater boom after the war is over.

#### **The Future of the Transvaal.**

Mention of the Transvaal War reminds me that the British Cabinet is face to face with the necessity of formulating proposals for the government of South Africa after the war is over. Unusually well informed politicians are openly avowing the Government's intention to found a Dominion of South Africa on the lines of Canada. There is, however, some slight probability that the two Republics may yet preserve in some mitigated form their independence, but the strongest possible pressure is being brought to bear in favor of annexation. Whatever may be the form of government, the Dutch element will still preponderate, and I again affirm that it would be prudent on the part of American exporters to cultivate the Dutch element, which at the present time is strongly antipathetic to the British.

#### **American Trade with Russia.**

Some time ago an old Russian trader remarked to me that the country that first invested its money in Russia would secure Russian trade. By a set of curious chances it appears that American money is being invested in Russia. An announcement lies before me that the Mutual Life Insurance Company of New York has purchased bonds of the Vladikavkas & Southeastern Railway to the extent of 20,000,000 roubles, bearing 4 per cent. interest. It is further remarked, should the venture prove profitable, it is not unreasonable to suppose that it will lead to further investment of American capital in Russia. Curiously enough, at the same time I see it announced that Russia has signified its intention of giving to American manufacturers the first opportunity of obtaining concessions in Tallen-wan. There can be no doubt that the presence of American money in Russia will facilitate trade with Russia. Ten years ago every Plow in Southern Russia was of English make. At the present moment 90 per cent. of them are American. I am now in correspondence with a traveler who early in the new year intends starting out from Odessa, traveling northeast to Moscow, thence east to Nijni Novgorod, carrying Tools, Hardware, Machine Tools and a general array of metal products. He is at the moment in communication with English houses only; but there are plenty of American concerns who ought to be ready to do the business. I have also received during the past fortnight two letters from Odessa asking me to procure agencies for a general line of Hardware goods. I communicated with two or three large English export houses but found that they were already represented. The letters still remain on my desk at the moment unsatisfied.

In Northern Russia railway communications are being opened with great rapidity, so that much virgin territory, rich in agricultural produce, is ready to be exploited. It is a case of first come, first served.

### **From a Buyer's Point of View.**

#### **Article IV.**

THIS has been an unusually busy day with me, I having entertained 14 Hardware missionaries; or perhaps it would be more correct if I said I had been entertained by that number of commercial tourists. It has been a rainy day, and nearly every man who has entered my office has opened the conversation by saying something about the weather. Did it ever strike the reader that a man shows his character, to some extent at least, by the way he speaks of the weather?

#### **Different Views of the Weather.**

For example, my first commercial caller shook hands with me in a limp kind of a way and said, "Beastly day, isn't it?" The second or third caller came up smiling, gave me a grip that was full of heartiness, and said, "Glorious rain we are having. It must be worth millions to the farmers." I remember this same cheerful commercial tourist calling one hot day in July, when we were all busily engaged in mopping our foreheads, himself included, and all he said was, "This kind of weather is just what is needed to make the corn hump itself." I have often wished that I could even appear to be as cheerful under unfavorable conditions as this man does, but cheerfulness cannot be assumed successfully.

#### **The Salesman Who Hurries.**

One of the traveling salesmen who called on me to-day is always in a hurry. He usually finishes here—or goes through the motions—in a day. Once he telegraphed me that he would arrive on train due at 1.30 p.m. and that he intended going West on the same train, and asked me to meet him at the depot. I felt half inclined to telegraph him as another buyer is reported to have done in a similar case, "All right. Will meet you with a brass band!"

Instead I wired my hasty friend that it would be impossible for me to see him on arrival of the train, so he stopped off for a few hours to see me. His nervous condition of haste put me in a state of mind that prevented my doing the business with him that I might have transacted had he been less impatient. Mable in one of his essays says this: "The man in whom haste is so evident that his very presence wearies and irritates is generally superficial and ineffective." That sentiment is especially true of those traveling salesmen who seem to be rushing around the country, not so much for the purpose of marketing their products as to see how many cities they can visit within a certain period. The most successful salesman we have in our employment takes fully a third longer time in making his trip than the man he succeeded, and we obtained more business through the new man from the start than we have ever had from his predecessor, although the latter was looked upon as a first-class salesman; but he traveled too fast to be as effective as our new man, who takes things more slowly. Some one in our office dubbed the new man "The Great North American Turtle," but this name did not stick, and he is now known as the "Get There."

#### **What Makes a Successful Salesman.**

It would be folly to attempt to lay down any fixed rules that would enable any man to become a successful salesman, but judging from what I have seen of salesmen, both those who visit me and those whom we employ, I think a man to make a success of this "profession" should be possessed of originality and individuality. A strong personality counts for much in a traveling salesman. Of course it goes without saying that if a salesman once loses his reputation for truthfulness his usefulness as a salesman is badly crippled.

### Salesmen and Others Who Swear.

There are few of us who do not say "damn" sometimes. Even the buyer has been known to say "darn" on occasion, but I doubt if that man lives who does not think less of another man who indulges freely in "cuss words." In our office one of my partners used to swear just for recreation it seemed to me. There was nothing malignant about his "cussing," for he is a most kindly man and would not intentionally shock the sensibilities of any one. But he *did* swear. I wondered how he ever acquired the habit, for other members of the firm got along comfortably with never an oath to lend spice to the conversation. Perhaps my partner inherited this swearing habit—but his father was a clergyman. We engaged three girls as stenographers and office clerks, and I was curious to see whether my partner would use cuss words in their presence. I soon found the girls had no effect on his vocabulary. Bear in mind, my partner never indulged in coarse stories or conversation; 'twas just plain, every-day swearing. A few days after the arrival of our office girls my partner came down one morning and found a placard tacked up over his desk which read as follows:

"A Box of Candy to each of the Girls for every swear word spoken in this office."

My partner took no offense. He controlled his tongue to a limited degree after that, and has steadily improved ever since, but he has paid several bills for candy even lately.

There are several salesmen who call on me who if their conversation was to be reported in shorthand and written out in full, and then shown to them, would be ready to swear that they had never used so many "cuss words" during such a short period of conversation.

### New England Hardware Dealers' Association.

THE next monthly meeting and dinner of the New England Hardware Dealers' Association will be held at the United States Hotel, Boston, on Wednesday next, December 13. Ladies, wives and friends of the members, will be present on this occasion, this being the seventh anniversary of the inauguration of the ladies' night of the association. A specially attractive programme has been arranged by the Entertainment Committee, comprising Samuel H. Thompson of Lowell, Blon C. Pierce of Taunton and D. Fletcher Barber of Boston. The principal speakers of the evening will be Mrs. Julia Ward Howe, president of the New England Woman's Club of Boston, whose subject will be "Florence Nightingale," and Rev. Sarah A. Dixon of Tyngsboro, Mass., whose topic will be "A Plea for Perspective." The music of the evening will be furnished by the Westminster String Trio. The following Reception Committee has been appointed: Austin H. Decatur, Boston; Elisha J. Neale, Lowell; Edward A. Loomis, Providence; John H. Sayward, Haverhill; William E. Plumer, Somerville; Geo. J. Mulhall, Boston, and James A. Farless, Boston. A reception from 4 to 5.30 p.m. will precede the dinner, which will be served promptly at the latter hour.

### Request for Catalogues, &c.

W. C. STARR, Clyde, Ohio, has disposed of an interest in his business to C. W. Arner, formerly of Wellington, and the style has become Starr & Arner. Catalogues and price-lists from the trade are solicited by the new firm.

THEODOR KRUEGER, a local Hardware merchant of many years' standing, and one of the founders of the Chicago Retail Hardware Dealers' Association, died on the 4th inst. His active connection with the association was recognized by the organization, the members attending the funeral in a body.

### The Ironville Hardware Association.\*

THE IRONVILLE HARDWARE ASSOCIATION, which appeared in serial form some months ago in *The Iron Age*, has been republished in pamphlet form. It is a breezy sketch, by a practical Hardwareman, of the tribulations and business difficulties of a quintette of Hardware retailers doing business in a manufacturing town on the shore of one of the great inland seas where there is a good harbor and considerable shipping, and which is the Mecca for farmers for 30 miles around.

There are 25 chapters, covering 79 pages, which narrate first the conditions leading up to the inception of the idea to have a *sub rosa* organization, followed by a pro and con discussion of the feasibility and practicability of such associations, which being affirmatively determined an organization is formed. This is followed by a constitution and by-laws and the necessary details for making the project effective.

Then crops out the question of outside competition, the various difficulties with jobbers and manufacturers from whom they buy and how the problems are met. One profit destroying custom and annoyance was discontinued, this being the practice of making numberless special deliveries gratis; terms and cash discounts were also satisfactorily regulated, &c.

The lesson of the story is that through co-operation and mutual trust, born of a better acquaintance through frequent personal contact for consultation and discussion, many trade abuses, including unreasonable price cutting, were discontinued or abated.

The organizer was Jones, a hustler with the largest store, best fixtures and a comprehensive \$50,000 stock. Next comes Smith, old and conservative, an easy mark for factory buyers, some of whom tell fairy tales. Another character is Brown, comparatively new in business; has a stock of \$5000 or \$6000 and "stands in with the boys." White, still another, is a born organizer, works by system and seizes every opportunity to increase his wealth. The last of the group is Steiner, a picturesque German, who has the bulk of the German trade, handles the cheapest line of any, and although crude in expressing himself is hard headed and keen for the main chance.

The table of contents, which indicates in a general way the scope of the narrative, is as follows:

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Aside from being a crisp sketch by one familiar with the subject and easily read because of its humorous vein, it is of practical benefit to the retail Hardwareman and his clerks because of the intelligent treatment of numerous grievances, annoyances, abuses, &c., incidental to every day business life in this line of trade.

H. W. Warren has purchased the retail Hardware business of William Lambie, Forest River, N. Dak.

\*The Ironville Hardware Association. David Williams Company, Publishers and Booksellers, 232-238 William street, New York Price 25 cents, postpaid.



## Trade Winning Methods.

*This department will contain a description of approved methods of bringing customers to the store by means of newspaper advertising, circulars and such special expedients and methods as are found useful by enterprising and progressive Hardwaremen.*

*A cordial invitation is extended to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.*

### HARDWARE ADVERTISING CUTS.

The cuts shown herewith are among those recently added to our collection of advertising cuts for the use of Hardware merchants in their local advertising. Many experienced advertisers regard the use of illustrations in advertisements as advantageous, whether they are a simple reproduction of the article for sale or have more or less of a pictorial character, showing the article in use or in some other connection, not necessarily practical, with a view to attracting the attention of the reader to the article or to the advertisement as a whole. Cuts of a somewhat pictorial complexion have in this respect certain advantages over those which are mere illustrations of goods. These cuts, Nos. 54-59, are offered for sale at 50 cents each, postpaid.

The cuts which are herewith presented have been given to three persons, who are designated as X, Y and Z, who have given special attention to advertising matters, with the request that they indicate the manner in which the cuts can be used, feeling entirely free to criticise them or make suggestions in regard to the advertisement in which they are supposed to be given place. The views thus given will be of interest to merchants as calling attention to principles which are regarded as applying to advertising generally. The cuts are as follows:

Advertising Cut No. 54.



**SUGGESTIONS OF Z:** No. 54 is a humorous sketch representing a disciple of Izaak Walton, perhaps a truant from school. A few terse facts about "the Father of Angling," who was a noted English author and a London shop-keeper until the Civil War (born at Stafford, England, August 9, 1593; died at Winchester, December 15, 1683), may interest the intelligent reader, especially an angler. After the nugget of information, the fact that Izaak lived until his ninety-first year, might be coupled with the fascinating, recreative sport, and the whole rounded out with a definite announcement, with prices of Fishing Tackle and Anglers' Supplies, with information about fishing season or anything pertinent to the time and place that a fisherman needs to know.

**SUGGESTIONS OF X:** The cut of the fisherman is well adapted to head a column in a newspaper or for use in a circular or catalogue. The careless indifference to surroundings will appeal to the fisherman and lead him to peruse the advertisement. A list of articles with prices should follow the cut, not too many at a time, with a ref-

erence to the general line of Tackle carried, including Rods, Reels, Baskets, Minnow Pails, &c., below. The cut should not be used in many successive issues, but should be retired to give place to others, and when it reappears it will have recovered novelty. A dozen cuts can thus be used effectively and keep up interest in the advertisement which should always have the same place in the paper.

**SUGGESTIONS OF Y:** This is a cut which does not necessarily belong to an announcement relating in whole or in part to Fishing Tackle, &c., but may be used at any time in connection with the idea suggested of fishing for trade. In personally soliciting business it might be well for the salesman to wear a more cheerful and less eager expression of countenance.

Advertising Cut No. 55.



**SUGGESTIONS OF X:** The illustration is much more likely to attract attention in an advertisement than if simply a Lantern were shown with no pictorial surroundings. As the sale of these goods is principally confined to a comparatively small portion of the year, the cut can be used for this purpose successive seasons without losing its good effects. Points in regard to some of the different styles of Lanterns offered, a line devoted to each, with prices, is a good plan for an advertisement.

**SUGGESTIONS OF Z:** It is suitable for advertising tubular or other Lanterns, and a point might be made concerning the thoughtfulness of husband, father or brother, on guard at the gate, lighting the way to some member of the family returning from town on a belated shopping trip, or some allusion to railroad or other signaling. The combination of light and shade make this cut striking and one that will show up effectively in newspaper advertising.

**SUGGESTIONS OF Y:** This is a striking cut and will be sure to attract attention, no matter where it is placed on the page of a newspaper. While a Lantern is the only article of Hardware brought into prominent view, it is obvious that the illustration is one which may be employed to good advantage in other connections which will occur to the enterprising merchant. If he also possesses the quality of humor an advertisement illuminated with this cut might make very good reading.

Advertising Cut No. 56.



**SUGGESTIONS OF Z:** This cut is suited for fall and winter advertising, especially in connection with hunting and trapping. The two Onelida pattern Game Traps, with Chains, suggest the catching of muskrat, mink, fox, otter, beaver, bear and other game animals for food or profit, or the extinction of destructive animals. While only single spring Traps are shown, allusion might be made to double spring and Blake's pattern or jumper Traps. The imagination can be stimulated a little by mentioning that the wolf shown is evidently in trouble with his underpinning in a trap of larger size.

**SUGGESTIONS OF X:** The species of the animal shown may be somewhat in doubt, but the fact that a Game Trap has done effective work is plainly shown by the expression of the animal. While it is evident that a Trap like the ones shown in the cut is not responsible for his captivity, the illustration conveys the idea of the variety of Traps carried in stock. This impression may be strengthened by including in the advertisement the sizes of Traps, with the kinds of game they are designed for, and the prices at which they can be obtained at the store.

**SUGGESTIONS OF Y:** While this is, of course, adapted for a single column advertisement, it might be used as a centerpiece of a larger advertisement touching on Animal Traps, &c. The well drawn head of the wolf is, however, sure to attract the attention of the newspaper reader wherever the cut is placed.

Advertising Cut No. 57.



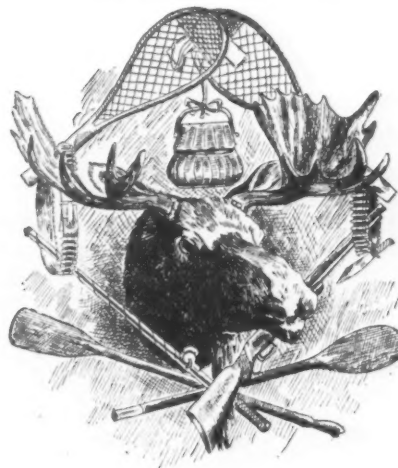
**SUGGESTIONS OF Z:** This cut relates specially to Dog Collars, but a general line of Dog Furnishings and other supplies in the way of food, &c., can be worked in, if the goods are carried in stock. Something instructive and interesting about dogs might precede mention of goods and prices, and would require but little trouble and research.

**SUGGESTIONS OF Y:** This is a cut which would look

well at the top of a single column advertisement, particularly if the advertisement occupied the first place in the column. It would also look well if partly surrounded with text, provided the type matter does not crowd it too much.

**SUGGESTIONS OF X:** The unusual way in which this dog wears his Collar will attract attention. It might be well to suggest that it was intended for "Your Dog." The advertisement might also mention other styles of Collars, Harness, Blankets and other Dog Furnishings. In this class of goods it is desirable to cater to the high class trade, who have fine dogs as pets and who are willing to spend liberally for their comfort.

Advertising Cut No. 58.



**SUGGESTIONS OF X:** The illustration of Sporting Goods opens up the way for its use in successive advertisements at different seasons of the goods shown, as the time approaches for the demand in any line. The cut would appear well as a center, with the names of the articles advertised and prices artistically arranged around it. It could also be used at the head of a column. Considerable white space about the cut would add to its effectiveness.

**SUGGESTIONS OF Y:** The central idea of the cut, suggested by the moosehead, is hunting, which perhaps commands more attention at this time of year than any other period. It is an attractive gathering of the goods shown, and may be used in connection with any announcement concerning goods of a sporting character.

**SUGGESTIONS OF Z:** This cut appeals to the sportsman. The moosehead serves as an incentive to outfit himself with the many implements of sport, and secure for his "den" at home visible trophies of prowess and skill. Allusion can be made to Rifle, Cartridge Belt and Ammunition, Hunting Knife, Snow Shoes, Rods, Baskets, Paddles, &c. This cut would also be appropriate for a bill head, stationery or circular.

Advertising Cut No. 59.



**SUGGESTIONS OF Y:** In connection with No. 59 it might be well for the merchant to say that not all the Revolvers



in stock are as heavy and ponderous as the one shown, but that the dainty and moderate sized are also carried. This is a cut that might advantageously stand by itself—that is, the type matter of the advertisement appearing above and below it.

**SUGGESTIONS OF Z:** This is suggestive of the early history of the Texan Republic when its first citizens insisted on \$50 worth of Firearms, but were satisfied with \$5 worth of clothes. This lad is possibly a nephew of the James boys or the Younger brothers in training for a raid on the Northfield bank. Supplies for target shooting in pistol galleries harmonize with this sketch, or it may be worked in an advertisement of Firearms generally.

**SUGGESTIONS OF X:** This youth is evidently more mature than his stature indicates, but the cut will serve as an admirable introduction to an advertisement of Firearms. This need not be confined to Revolvers, but may include Guns, Rifles, Shells, Cartridges, Cartridge Belts and other accessories. Prices of the articles advertised generally prove the part of most interest to the prospective customer.

## Organization of Furnace Dealers in Cleveland.

**T**HE Cleveland Association of Retail Furnace Dealers, Cleveland, Ohio, has within a few months been organized to promote the mutual interests of this industry. What has already been accomplished and what it is hoped to accomplish in the future for the advancement of business conditions peculiar to their trade is set forth in a communication from E. Bohm, Jr., 87 Public square, secretary of the Vulcan Club, which is only another and shorter name for the association alluded to above. He writes, in part, as follows:

We are aware of the existence of at least two other organizations of a character similar to that of the Cleveland Association; only one of these, to our knowledge, has proclaimed its existence publicly (we refer to the Rochester organization). That there is a crying need of an institution of this kind very few furnacemen will dispute, and the history of national organizations of kindred trades, and their beneficial influence, should go far toward demonstrating its practicability.

### ADVERSE CONDITIONS.

It is unnecessary to touch upon the adverse conditions with which the retail furnace dealer is forced to contend—he has an intimate and painful acquaintance with some, if not all, of them—according to the locality in which he is operating, and, we believe, should welcome any legitimate measure that would make toward their amelioration or suppression. The remedy for many evils could, and should, be found in wise legislation. This could never be effected by individual effort, but powerful influence could be wielded by strong organizations. The Cleveland organization was called into being some six or seven months since, and the first meetings were attended by seven or eight members of representative firms. Since then its growth has been steady. It now numbers 23 dealers, controlling probably 90 per cent. of the furnace business of the city. Its weekly meetings are well attended, and a spirit of harmony and helpfulness has developed in a most encouraging manner.

### STIMULATING MEMBERSHIP.

The initial fee and dues were fixed at a nominal sum, with a view to stimulating membership among the smaller members of the trade; we have yet to find such a one who is not free to declare that the benefits he has received outweigh, by far, the cost to him in time spent, or in dues. The Cleveland Association is thoroughly in earnest in its undertakings, and anxious to take up the work along broader lines. Having experienced the benefits of concerted action, it feels justified in urging its brethren of the trade to “try it for themselves,” and, if possible, will be helpful toward bringing about the inception of similar or of allied organizations. We invite existing organizations to correspond with us.

Mr. Bohm further writes that a lack of confidence existed between dealers before the formation of the association in Cleveland, and that margins of profit were cut to the vanishing point.

### Origin of the Association.

Last spring advancing prices of Iron and decline in furnace values was the anomalous condition of affairs. As a result of a conference between two firms who were

fierce competitors, invitations were issued to dealers for a meeting to canvass the situation, and after some preliminary work the organization was effected. The present membership roll of 24 names includes practically all of the trade. A schedule of prices has been adopted to which the members are adhering in a commendable spirit. The matter of credits is a prominent feature, and has a place in the order of business. A specific time for payment of work has been adopted, replacing the installment plan formerly in vogue.

### Urging Reforms.

The association is endeavoring to secure the passage of an ordinance looking to the licensing of heating contractors, the licenses to be dependent upon the successful examination of the applicant in matters relating to the theory and practice of hot air heating.

Another matter, which is considered of equal importance by the association, will be taken up at some opportune time. This is the enacting of a statute defining the rights of furnacemen on premises. The laws of Ohio, it is understood, offer no protection, a furnace being in the eyes of the law a fixture, so that it cannot be removed should payment for the same be refused.

The association feel that they have accomplished much in a brief period, and amply justified their existence.

## The Cash Discount Again.

**T**HE following letter from a New England Hardware house takes up the discussion of the cash discount, especially in relation to the communication of Joseph Ehart & Son, which was published in our last issue. The trade will recognize the force of the points made by our correspondents:

We note that the subject of cash discounts is receiving the attention of the National Hardware Association, and also of some of your correspondents. We wish to congratulate Ehart & Son upon the very pertinent letter in *The Iron Age* of November 30. This letter certainly puts the matter in the correct light, and one that if the manufacturers are honest they must adopt. But do they intend to live up to the new terms? Or does it mean that very soon we will all be doing business on the old terms—30 days, and if not paid then no move made to collect, and three to four months taken by nearly all buyers? People who are willing to pay spot cash are entitled to some recognition, and should be allowed something for so doing. We do not mean buying on ten days' time, taking 30 days, and then deducting the cash discount. Ten days should mean ten days. And we think that this is the principal reason for seeking to withdraw cash discounts. So many have been in the habit of taking a cash discount after 30 and even 60 days that manufacturers are tired of it, and we do not blame them. However, no one is to blame for the situation but themselves. If 30 days are to be the terms live up to it, and lots of our competitors will soon be driven out. Give us a cash discount for payment in ten days, and hold it to ten days, not 30. Do not talk about “paying 24 per cent.” for money. This is not true. It is a premium given good customers—nothing more. They are entitled to it, and in time will get it. It is an advantage that a dealer with capital to do business with has over one who is carried by his jobber. We trust that every dealer in the country will take up this subject and not let up until the end is gained.

Roberts & Bridges are successors to C. M. Gibbs in the Hardware, Stove and Implement business at Greenfield, Ind. They are reshelving the store and adding a number of new fixtures for the accommodation and display of goods.

Geo. W. North, dealer in Shelf and Heavy Hardware, Stoves, Furnaces, Roofing, Mill Supplies, &c., Columbia City, Ind., in view of failing health has disposed of his business to Raupfer & Jontz, who will continue at the old stand.

## Price-Lists, Circulars, &c.

S. WILDER & Co., Holliston, Mass.: Folder illustrating line of Copper Pumps and giving the list prices for the several sizes and kinds and of the different parts of same. Some of the Pumps shown are copper top, iron top, air chamber and flange force Pumps. The pumps of this company, it is stated, have been before the trade for over 60 years and are well and favorably known.

THE MICHIGAN BARREL COMPANY, Grand Rapids, Mich.: Refrigerator catalogue of the Yukon, Economic and Chilkoot Refrigerators. These lines are intended to meet the full requirements of the trade, whether for first-class or for low priced goods, with stationary or removable ice chambers, zinc lined or white enameled provision chambers, &c. All are made of hard wood.

THE ILLINOIS REFRIGERATOR COMPANY, Morrison, Ill.: Catalogue of Automatic Refrigerators. The construction of these Refrigerators differs from those ordinarily made in having the ice chamber on the side instead of overhead. A very complete line is shown, including porcelain lined boxes in three sizes. All Refrigerators but the smallest and largest sizes have been increased in height 2 inches for the coming season, the smallest and largest being made but 1 inch higher.

JOHN H. GRAHAM & Co., 113 Chambers street, New York: Illustrated catalogue for the season of 1900 of Bicycle Sundries and parts. The goods shown are the products of New Departure Bell Company, Jos. Lucas & Son Company, Slaymaker-Barry Company, Chantrell Tool Company, G. W. Cole Company, P. Lowentraut Mfg. Company, Milwaukee Automatic Machine Company and Braunsdorf-Mueller Company, for whom they are sole selling agents.

CHANTRELL TOOL COMPANY, Reading, Pa., John H. Graham & Co., 113 Chambers street, New York, sole selling agents: Illustrated catalogue of Bicycle Chains.

## Trade Items.

**A**MONG the Special Notices this week will be observed the advertisement of Arthur Brittan & Co., 154 Lake street, Chicago, who are open for another account as representatives of Hardware manufacturers to the jobbing trade. This is an excellent opportunity for some establishment desiring to be well represented.

THE UNITED STATES WIRE MAT COMPANY, Decatur, Ill., have issued a little brochure entitled "Modern Mats, What They're Good For," which furnishes a great deal of very interesting reading for such a small document. The good points of Wire Matting are set forth in ample detail, but more stress is laid on the special features of United States Matting, such as self cleaning, rolling up like a carpet, ease of cutting any size desired from a roll, no curling up of the ends, the furnishing of any size or length desired, &c.

LAWRENCE BROTHERS, Sterling, Ill., manufacturers of Door Hangers and other Hardware Specialties, are now making a full line of common Strap and T-Hinges.

THE MICHIGAN BARREL COMPANY, Grand Rapids, Mich., have been greatly annoyed by reports persistently circulated that they intend to abandon the business of manufacturing Refrigerators. These reports are totally unfounded. The company are in the Refrigerator business to stay, and are improving and enlarging their plant for the purpose of handling a still larger trade than they have enjoyed in the past. They have just completed a new two-story warehouse covering a ground space of 40 x 450 feet, and will at all times carry a stock sufficient to fill orders promptly. Arthur Brittan & Co., 154 Lake street, Chicago, are their selling agents.

A. BANNWART, Zurich, Switzerland, importer of Hardware, Tools and Metal Specialties made in the United States, who has been here since November 6 on a business trip, will return to Europe by the French line steamer December 7. One of the objects of his visit was the Export Exposition just closed in Philadelphia. Mr. Bannwart has dealt almost exclusively in American made goods for a great many years, his last visit to this country being in 1884. The progress visible everywhere impresses him very favorably, and he likes to handle American made goods because of the style, finish and general get up of the wares and their fitness for the purpose they are designed for.

CONCORD AXLE COMPANY, Penacook, N. H., advise us that their Brown's patent Roller Bearing Axle, which is illustrated in their advertisement in this issue, is proving successful and meeting with a very satisfactory sale. The company state that they have been assured by parties using these Axles that very much of the horse-power required to move freight is saved, and that the Axles are wearing well.

MILLER, SLOSS & SCOTT, San Francisco, under date of 29th ult., announce that they have purchased the entire stock and good will of E. T. Allen Company, 416 Market street, and will immediately add the wholesale stock to their own. The retail portion of the Allen business has been disposed of to the H. E. Skinner Company, who will continue a strictly retail business in the old quarters. Miller, Sloss & Scott call the attention of the trade to the increased advantages derived by this addition to their already large and well assorted stock of Sporting Goods. They will henceforth carry a complete line of Athletic Goods, including Gymnasium, Baseball, Football and Golf Supplies.

## Among the Hardware Trade.

Lundy & Lewis, Metamora, Mich., have succeeded A. Lundy & Son in the retail general Hardware business.

Lord & Drake are successors to Frank H. Lord, Cambridge Spring, Pa., dealers in Hardware, Farm Implements, Plumbers' Goods, &c.

The business of Lieber & Campbell, Hartford City, Ind., was damaged by fire on the 10th ult. The building in which they were located is now being repaired and a larger part of it will hereafter be occupied by them, comprising the entire ground floor, 40 x 120 feet in dimensions.

C. F. Schmidt has succeeded Schmidt & Bourne in the retail business at Marshalltown, Iowa.

G. Kurth & Son, Wausau, Wis., have lately embellished their store with a plate glass front.

J. M. Williams & Co., North Adams, Mich., have lately opened a branch store at Jonesville. During the past summer the firm built an addition to their North Adams store, 23 x 75 feet, two stories, the dimensions of that establishment now being 46 x 75 feet.

The Seminole Hardware Company, Wewoka, I. T., were recently robbed of \$150 worth of Guns and Cutlery and \$35 in cash.

Voltz & Kiest are successors to Voltz Bros., Nunda, Ill.

Fisher & Amey, Underwood, Iowa, have sold out their Hardware business, but will continue in the Implement line.

Howenstein & Burback have succeeded Howenstein & Shively, Nappanee, Ind.

Cully Bros. are conducting the Hardware, Stove & Farm Implement business at Willshire, Ohio, formerly carried on by W. J. Cully & Co.

P. L. Peacock & Co., Cochran, Ga., were robbed of a small quantity of Pistols on the 4th ult.

A. L. & W. B. Cochran, Wynnewood, I. T., are disposed to sell out their Hardware business with a view to taking up that of cattle exclusively.

F. W. Kramer has lately opened a new store at Hastings, Minn., handling Hardware, Stoves, Furniture, &c.

Wymore & Bacon, Rose Hill, Iowa, have dissolved and F. P. Bacon is continuing alone under his own name.

W. R. Evans has succeeded Evans & Mullin, Williamsburg, Iowa.

Colter Bros., Marysville, Mo., have sold out to E. M. Miller, who is continuing at the old stand.

Johnson & Cockroft, Fergus Falls, Minn., have removed their stock to De Lamere, N. Dak.

Dein & Morton, Weableau, Mo., have succeeded F. P. Devin & Son and D. M. Deiner.

O. E. Haines has purchased the Hardware business of George E. Lundborg, Bloomfield, Neb.

H. C. Anderson & Son, Sturgis, S. Dak., have lately made a number of important improvements in their establishment and now have about 18,000 square feet of



floor space. A short time since they were robbed of \$200 worth of goods. The thieves proved to be boys under 16 years of age and they have been sentenced to the reform school for three years.

V. H. Cook has removed his Hardware stock from Copenhagen to Watertown, N. Y., and with William D. Young, formerly with Hyde, Young & Hyde, has embarked in business under the style of Young & Cook. The firm are retailers of Stoves, Furnaces, House Furnishing Goods, &c., and also have a department devoted to plumbing and steam and hot water heating.

C. H. Delamater has entered the Hardware business at Cherry Creek, N. Y. Besides Shelf and Heavy Hardware Mr. Delamater is handling Stoves, Tinware and Sporting and Athletic Goods.

W. W. Cunningham has succeeded Chas. Graham, New London, Iowa, dealer in Hardware, Implements and Buggies.

Larson & Gilman have succeeded Meader & Gilman at Eldora, Iowa.

Wm. Anderson and J. E. Thomas have purchased the business of Campbell Bros., Winnipeg, Manitoba, and will continue under the style of Anderson & Thomas. They are intending to equip the store with shelf boxes at an early date.

H. A. Peterson has succeeded L. D. Watson in the retailing of Hardware, Stoves and Tinware, Sporting Goods, Harness, &c., at Pilger, Neb.

E. J. Knight has purchased the interest of J. J. McKinley in the Hardware firm of Knight & McKinley, Alden, Mich., who started in business a short time since, and will continue at the same stand under his own name. The stock carried comprises Shelf and Heavy Hardware, Stoves, Agricultural Implements, &c.

### The Mogul Rattan Broom.

The cut herewith shown represents a rattan broom put on the market by the Osborn Mfg. Company, 40 High street, Cleveland, Ohio. The broom is referred to as being very strongly constructed, the reeds or splints all being double length and formed into loops so that they will not work loose or come out. The handle projects well down into the broom and is firmly secured with steel



The Mogul Rattan Broom.

bands and wrought iron nails. The principal use of the broom is in removing snow and ice from street railway switches, crossings, &c., while it is also adapted to other heavy sweeping. Application has been made for letters patent.

Fire destroyed the large wholesale establishment of the Fones Bros. Hardware Company, Little Rock, Ark., on the night of the 24th ult. The building was of brick,

three stories and basement, 125 feet wide by 100 feet in length. The loss is estimated at \$200,000, with insurance of \$125,000 on the stock and \$15,000 on the building. The company are naturally somewhat crippled by this catastrophe, but will continue to do business and have made arrangements for filling all orders promptly. The origin of the fire is unknown.

William J. Melson, Danneborg, Neb., who is carrying on the retail Hardware business in a small way in connection with Bicycle repairing and tin shop, is erecting a new building, on the completion of which he will install a full line of Hardware and Stoves.

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### Thor Roller Bearing Hub.

\* Aurora Automatic Machinery Company, Aurora, Ill., for whom Ives-Brandenburg Company, 56 Reade street, New York, are general United States selling agents, have put on the market the Thor roller bearing hub for bicycles, here illustrated. The main feature of the construction is a series of rollers placed in about the same position as balls are ordinarily, except that being cylindrical in shape they have contact with cylindrical bearing surfaces of the hub shaft and in outer shell. The rollers carry only the horizontal load of the hubs, the end thrust

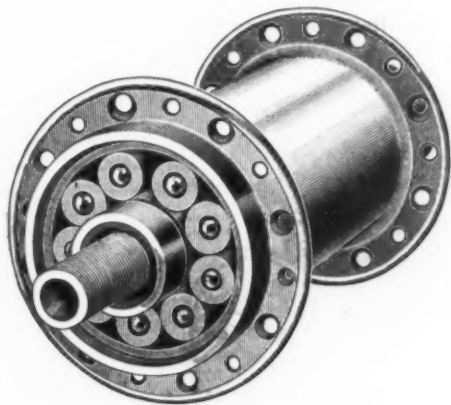


Fig. 1.—Thor Roller Bearing Hub.

being taken care of by balls caged in the center of each roller. The balls being slightly larger in diameter than the width of the roller take all the end thrust between flange and hub shaft and outer washer of the hub shell. Some of the principal features of the unique construction are as follows: The outer bearing surface of cup is a cylindrical ring pressed into each end of the hub shell, resting against the shoulder on the inside, after which it is ground true with the threads in the ends of the hub and lapped on one continuous mandrel to insure accuracy and alignment. The inner bearing surfaces which take the place of the regular cones are pressed on the shaft, after which they are ground to exact diameter and alignment. The rollers are made of tool steel and accurately ground. The end caps, which serve as dust caps, take the end

Sectional.

End.

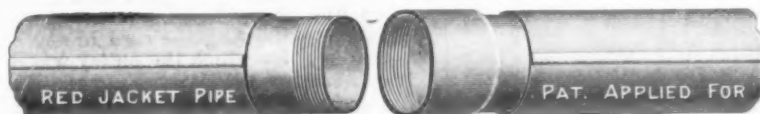
Perspective.



Fig. 2.—Views of Roll.

Fig. 3.—Inside View of End Cap or Nut of Hub.

thrust and make a dust proof joint. The rollers are incased in a simple roll retaining and separating device not shown in the illustrations and held in place by a small round steel spring, just inside of the dust cap on the inner bearing surface. They are strongly secured to the shaft and neither balls nor rollers can drop out or cause trouble when the shaft or inner parts are removed for cleaning, &c., but by sliding out the steel spring all the

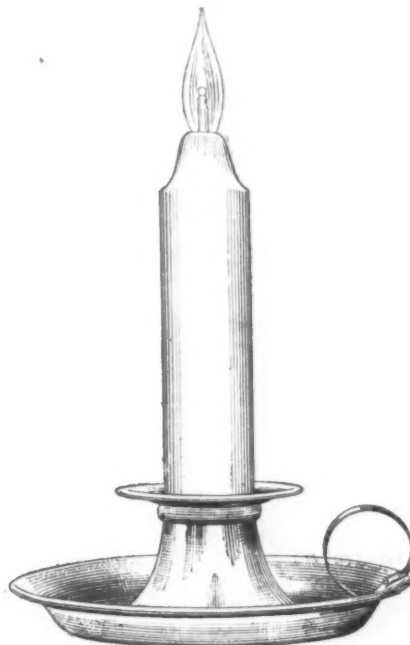


Red Jacket Well Pipe.

rollers can be instantly released. The hubs are provided with Thor self adjusting ball washers. The main advantages of this construction are referred to as follows: When the end caps are screwed up properly there is no other adjustment necessary; the reduction of friction, especially in hill climbing and under load, and the enduring character of the bearings, which are said to wear much better than ball bearings. The point is made that this style of hub can also be readily applied to old wheels.

### Electric Candle.

United States Battery Company, 253 Broadway, New York, have brought out the Old Dutch Candle, here illustrated. This is in addition to their line of electric specialties in the way of bicycle, carriage, lantern, night lamp and other electric light appliances operated by cylindrical storage batteries. The candlestick and candle are made of brass, the latter being finished in white porcelain and the former polished and lacquered in old brass finish. At the bottom is a screw cap, the removal of which allows of the introduction of two storage batteries, one above the other. When a light is required a half turn of the incandescent bulb at the top closes the circuit and gives a



Electric Candlestick with Storage Battery.

beautiful electric light without odor, grease or danger from fire and at slight expense. Reversing the bulb extinguishes the light. The diameter of the pan is 7 inches; candle,  $6\frac{3}{4} \times 1\frac{5}{8}$  inches in dimensions; bulb,  $2\frac{1}{2}$  inches long and  $\frac{3}{4}$  inch across at widest part.

### Red Jacket Well Pipe.

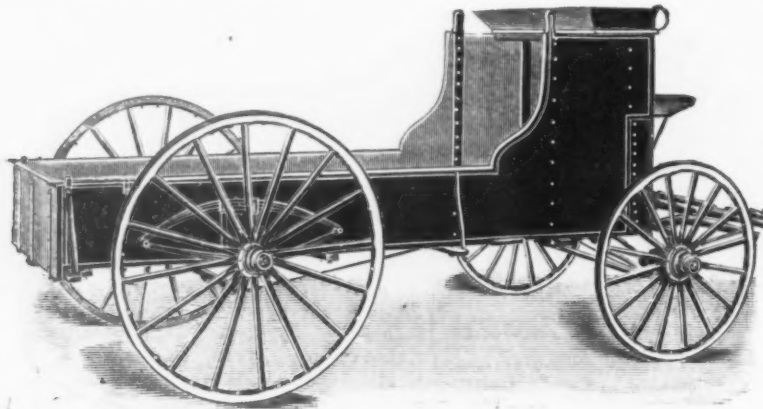
The Red Jacket Mfg. Company, Davenport, Iowa, manufacturers of force, lift, tubular, irrigating, tank, spray and cased well pumps, have brought out a new style of pipe which they are offering to the trade. An illustration is shown herewith. It is especially designed for use with Red Jacket pumps in wells from 35 to 150 feet deep, but can be used in deeper wells if necessary, as it has been tested to 90 pounds pressure. This is a new departure in pipe, as it takes the place of the usual wrought pipe at much lower cost. In fact the high price of wrought pipe led to the invention of the substitute. It is made of heavy galvanized sheet steel, fastened together with a lock seam joint and then soldered. The ends are fitted with malleable iron nipples and couplings, riveted and soldered to the pipe and threaded with regular iron pipe threads. The pipe is made in lengths about  $10\frac{1}{2}$  feet

long,  $2\frac{1}{2}$  and 3 inches in diameter and weighs about 2 pounds to the foot, making it lighter and easier to handle than  $1\frac{1}{4}$ -inch wrought pipe, while it costs but little more. It takes the place of regular P. & R. galvanized pipe between the pump head and lower cylinder, while  $1\frac{1}{4}$ -inch suction pipe can be used below the cylinder. The company intend to make all sizes of this pipe from  $1\frac{1}{4}$ -inch up, but for the present can only supply  $2\frac{1}{2}$  and 3 inch pipe.



### A New Hardware Delivery Wagon.

Herewith an illustration is given of a new style of hardware delivery wagon now being manufactured by Shipman, Bradt & Co., De Kalb, Ill. The bed of the wagon is only about 20 inches from the ground, which greatly facilitates the loading and unloading of stoves, refrigerators and other heavy goods. The front gear enables as short a turn to be made as with any car under reach wagon with a body of the same length. This is accomplished by the use of a gear coupler 12 inches back of the front axle, through which the king bolt passes. A throw is thus given to the front gear, allowing it to swing round in front of the wagon to make a short turn. A light draft is secured by using full hight wheels and by coupling the front and rear wheels close together, thus applying the



A New Hardware Delivery Wagon.

draft directly to the load, which being carried low avoids the swaying of the body when the road is rough. The high seat and straight bottom give clear room for a load to the front of the wagon. Although the body is low down it is mounted on springs.

### Double Bushed Twin Roller Chain.

Chantrell Tool Company, Reading, Pa., John H. Graham & Co., 113 Chambers street, New York, sole selling agents, in a new catalogue of bicycle chains just issued show the double bushed patent twin roller chain, No. 400, here illustrated. The side links are said by the makers to be made of high carbon cold rolled steel having a tensile strength of 160,000 pounds to the square inch. The



Fig. 1.—Double Bushed Patent Twin Roller Chain.

links are beveled inside, which prevents any climbing of the sprockets. The rollers are made of tool steel and finely tempered. The rollers run on hardened tool steel

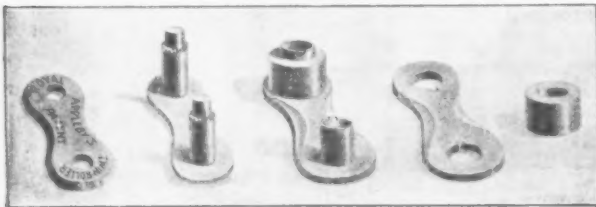


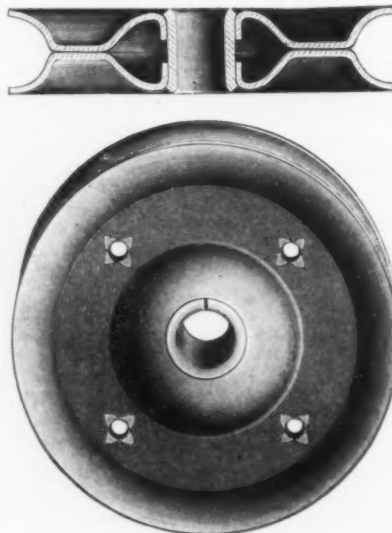
Fig. 2.—Detailed View of Parts of Link.

sleeves that are driven to place in the side links, which gives the bushing a bearing its full length. There is a bushing or sleeve driven on the rivet made of the best tool sheet steel, which has a bearing the full width of the chain. The hardened steel sleeve on which the rollers run and the hardened steel sleeve which is driven on the rivet make, it is claimed, the best kind of a bearing. It

is said with this form of construction the company can furnish a chain  $\frac{1}{8}$  inch wide, which they claim to be as strong as the  $\frac{1}{4}$  inch block chain, as there are no blocks to break and the strength of the chain is only limited by the strength of the side links. The company say the complete chains are tested at 2000 pounds and that no chain is shipped if it has any variation in elastic limit, tensile strength, back lash or side play and that all are fully warranted. The chains are made in  $\frac{1}{8}$ ,  $\frac{3}{16}$  and  $\frac{1}{4}$  inch sizes.

### Improved Grand Rapids Sash Pulley.

An illustration is herewith given of the improved all steel sash pulley wheel now used by the Grand Rapids Sash Pulley Company, Grand Rapids, Mich. The two



Improved Grand Rapids Sash Pulley.

turners to hold up any weight that a sash cord will support. The construction adopted is a distinct improvement in this line of goods on account of the old wheel splitting apart and allowing the cord to rest on the axle, defeating the object for which the pulley was originally devised.

Howard D. Seltzer, formerly purchasing agent for Shelby Steel Tube Company, Cleveland, Ohio, has resigned his position to enter the Hardware firm of Seltzer & Steele, at Shelby, Ohio. As yet a successor to Mr. Seltzer has not been appointed.

Parry & Wolters, Manistee, Mich., who have bought the stock of Mill Supplies formerly carried by J. L. Sweetnam & Co., who have discontinued business, have rented the building adjoining their present store and will connect the two warerooms. This will enable them to put in a fine line of Builders' Hardware and House Furnishing Goods. The firm are wholesalers and retailers.

# Current Hardware Prices.

REVISED DECEMBER 5, 1899.

**General Goods.**—In the following quotations General Goods—that is, those which are made by more than one manufacturer, are printed in *Italics*, and the prices named represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail merchants. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

**Special Goods.**—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

**Cut Prices.**—In the present condition of the market, while many advanced prices are announced by the manufacturers, lower prices are often made by the wholesale trade who have stocks on hand purchased at former quotations.

**Names of Manufacturers.**—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE INDEX SUPPLEMENT (April 6, 1899), which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

**Standard Lists.**—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

**Additions and Corrections.**—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

## Adjusters Blind—

Domestic, # doz. \$3.00...33½¢@39½¢10¢  
North's...33½¢@39½¢10¢  
Zimmerman's—See Fasteners, Blind.

## Window Stop—

Ives' Patent...25¢55¢  
Taplin's Perfection...50¢

## Ammunition—See Caps, Cartridges, Shells, &c.

## Anvils—American—

Eagle Anvils...# 7½¢@77½¢  
Hay-Budden, Wrought...90¢9½¢  
Horseshoe brand, Wrought...90¢9½¢  
Samson...# 7½¢@77½¢  
Trenton, Wrought...# 8½¢@85½¢

## Imported—

Armstrong's Mouse Hole...89¢@94¢  
Peter Wright's...90¢@94¢

## Anvil, Vise and Drill—

Millers Falls Co., \$18.00...30¢

## Apple Parers—See Parers, Apple, &c.

## Augers and Bits—

Common Double Spur...60¢10¢10¢@...  
Boring Machine Augers...60¢10¢10¢@...  
Car Bits, 12-in. twist...60¢10¢10¢@...  
Jennings' Pattern...60¢10¢10¢@...  
Auger Bits...60¢10¢10¢@...  
Ford's Auger and Car Bits...40¢10¢40¢10¢10¢@...  
Forstner Pat. Auger Bits...25¢  
C. E. Jennings & Co.'s...  
No. 10 ext. lip. H. Jennings' list...40¢40¢10¢  
No. 30. R. Jennings' list...50¢10¢60¢  
Russell Jennings...25¢10¢60¢  
L'Hommedieu Car Bits...15¢10¢5¢  
Pugh's Black...20¢  
Pugh's Jennings' Pattern...35¢  
Snell's Auger Bits...50¢  
Snell's Bell Hangers' Bits...50¢  
Snell's Car Bits, 12-in. twist...60¢  
Wright's Jennings Bits (R. Jennings' list)...50¢

## Bit Stock Drills—

Standard list...65¢65¢10¢

## Expansive Bits—

Clark's small, \$18; large, \$20...50¢10¢  
Lavigne's Clark's Pattern, No. 1, # doz. \$20; No. 2, \$18...50¢10¢  
Steer's No. 1, \$20; No. 2, \$18...40¢40¢5¢  
Swan's...40¢

## Gimlet Bits—

Common Double Cut...gro. \$2.75@3.25  
German Pattern...gro. \$5.00@5.50  
Double Cut, makers' lists...50¢50¢10¢

## Hollow Augers—

Ames...25¢10¢  
Bonney's Adjustable, # doz...\$16.00  
New Patent...25¢10¢  
Universal...30¢

## Ship Augers and Bits—

Ford's...40¢10¢40¢10¢10¢  
Snell's...40¢  
L'Hommedieu's...15¢10¢15¢10¢10¢  
Watrous'...40¢40¢5¢

## Awl Hafts, See Hafts, Awl.

## Awls—

Brad Awls:  
Handled...gro. \$2.75@3.10  
Unhandled, Shouldered gro. 65¢60¢  
Unhandled, Patent...gro. 60¢70¢  
Peg Awls:  
Unhandled, Patent...gro. 51¢31¢  
Unhandled, Shouldered gro. 65¢70¢  
Scratch Awls:  
Handled, Common...gro. \$3.50@4.00  
Handled, Socket...gro. \$11.50@12.00

## Awl and Tool Sets—See Sets, Awl and Tool.

## Axes—

First Quality, best brands...\$5.00@6.25  
First Quality, other brands...\$5.50@5.75  
Jobbers' Special Brands:  
Good Quality...\$5.25@5.50  
Best Quality...\$5.00@5.50  
Cheap, Handled Axes...\$4.75@5.00  
Beveled, add 25¢ doz.

## Axle Grease—See Grease, Axle.

## Axles—

Concord, loose collar...6¼¢ 6 c  
Concord, solid collar...6¼¢ 6 c  
No. 1 Commons...5 c 4½¢  
No. 1½ Com. New Style...5¼¢ 5¼¢  
No. 2, Solid Collar...5¼¢ 5¼¢  
Nos. 7, 8, 11 to 14...50¢10¢  
Nos. 7, 8, 11 to 14, 100 sets...60¢  
Nos. 15 to 18...50¢  
Nos. 19 to 22...60¢10¢

## Boxes, Axle—

Common and Concord, not turned...lb. 5c  
Common and Concord, turned...lb. 5c  
Half Patent...lb. 9c

## Balances—

Caldwell low list...25¢  
Pulman's...63½¢

## Spring—

Spring Balances...50¢50¢55¢  
Chatillon's Light Spz. Balances...40¢10¢  
Chatillon Straight Balances...40¢  
Chatillon Circular Balances...50¢  
Chatillon's Large D al...30¢

## Barb Wire—See Wire, Barb.

## Bars—Crow—

Steel Crowbars, 10 to 40 lb., per lb...½¢4½¢

## Beams, Scale—

Scale Beams, List Jan. 12, '83...30¢30¢55¢  
Chatillon's No. 1...30¢  
Chatillon's No. 2...40¢

## Beaters—Egg—

Standard Co.:  
No. 5 Steel Handle Dover...gro. \$6.50  
No. 10 Cast Handle Dover...gro. \$8.00  
No. 10 Steel Handle Dover...gro. \$8.00  
No. 15 Extra Heavy Steel Handle...gro. \$15.00

Rival, # gro...\$10.00  
Taplin Mfg. Co.:  
No. 50 Small Family size...\$6.50  
No. 100 Regul r Family size...\$8.00  
No. 102 Regul r Family size, tinned...\$10.00  
No. 150 Large Family size...\$15.00  
No. 152 Large Family size, tinned...\$17.00  
Lyon's Standard...\$12.75  
Wonder (S. S. & Co.)...gro. \$17.50

## Bellows—

Blacksmith—  
Standard list...70¢70¢55¢

Inch...30 32 34 36 38 40  
Each...\$4.25 4.50 5.25 5.75 6.50 7.75  
Extra Length:  
Each...\$4.75 5.25 5.75 6.50 7.40 8.75

## Molders—

Inch...9 10 11 12 14 16  
Doz...\$6.75 7.25 8.50 9.50 12.00 14.50

## Hand—

Inch...6 7 8 9 10 12  
Doz...\$3.75 4.25 4.50 5.00 5.75 6.75

## Bells—Cow—

Ordinary goods...75¢10¢  
High grade...70¢70¢10¢  
Jersey...75¢75¢10¢  
Texas Star...50¢10¢

## Door—

Gong, Yankee...55¢  
House, R. & E. Mfg. Co.'s...50¢10¢  
Lever and Pull, Sargent's...38½¢10¢

## Hand—

Hand Bells, Polished...65¢65¢10¢  
White Metal...65¢65¢10¢  
Nickel Plated...50¢50¢10¢  
Swiss...60¢60¢10¢

## Miscellaneous—

Farm Bells...lb. 2¢9½¢  
Steel Alloy Church and School...50¢10¢30¢  
Wilmot & Hobbs Mfg. Co., Gongs...70¢

## Belting

## Rubber—

Common Standard...70¢10¢75¢  
Standard...60¢10¢70¢  
Extra...60¢60¢10¢  
High Grade...60¢60¢10¢

## Leather—

Extra Heavy, Short Lap...50¢10¢  
Regular Short Lap...60¢60¢10¢  
Standard...60¢10¢60¢10¢5¢  
Light Standard...70¢

## Cotton—

Rosendale-Reddaway B. & H. Co.:  
Sphinx Brand...80¢10¢  
Durable Brand...70¢

## Bench Stops—See Stops, Bench

## Benders and Upsetters, Tire—

Green River Tire Benders and Upsetters...20¢  
Chas. H. Iron & Bolt Co...40¢40¢5¢  
Stoddard's Lightning Tire Upsetters...40¢50¢

## Bicycle Goods—

Lane's Cycle Hanger...33½¢5¢  
John S. Long's Son's 1894 list:  
Chain...50¢  
Parts...50¢  
Spokes...50¢  
Tubs...60¢

## Bits—

Auger, Gimlet, Bit Stock Drills, &c.—  
See Augers and Bits.

## Bit Holders—See Holders.

## Blind Adjusters—See Adjusters, Blind.

## Blind Fasteners—See Fasteners, Blind.

## Blind Staples—See Staples, Blind.

## Blocks—Tackle—

Common Wooden...70¢10¢75¢5¢  
Eddy's steel...60¢10¢  
Hartz steel...50¢10¢  
Ford's Star Brand, Self Lubricating...70¢  
Hollow Steel, Ford's Pat. Star Brand...10¢  
Lane's Patent Automatic Lock and Junior...30¢  
Stowell's Novelty, Mal. Iron...50¢  
See also Machines, Hoisting.

## Boards, Stove—

1899 List:  
Zinc...20¢  
Crystal and Embossed...40¢

## Bolts—

Carriage, Machine, &c.—  
Common list Jan. 30, '95...15¢15¢5¢50¢10¢  
Norway Iron, \$3.00, list Oct. 7, '84...75¢75¢10¢

Phila. Eagle, \$3.00 list...75¢10¢75¢10¢5¢  
Bolt Ends, list Jan. 30, '95...60¢5¢50¢10¢5¢  
Machine, list Oct. 1, '99...50¢5¢50¢10¢5¢

NOTE.—Jobbers' prices on Bolts are now generally lower than manufacturers'.

## Door and Shutter—

Cast Iron Barrel, Round Brass Knob:  
Inch...3 4 5 6 8  
Per doz...\$0.33 .38 .45 .57 .80

Cast Iron Spring Foot:  
Inch...6 8 10  
Per doz...\$1.00 1.25 1.75

Cast Iron Chain, Flat, Japanned:  
Inch...6 8 10  
Per doz...\$0.85 1.20 1.50

Cast Iron Shutter, Brass Knobs:  
Inch...6 8 10  
Per doz...\$0.60 .90 1.15

Wrought Barrel Brass Knob:  
Inch...3 4 5 6 8  
Per doz...\$0.44 .50 .61 .70 1.28

Wrought Barrel...70¢70¢10¢  
Wrought...Bronzed...50¢50¢10¢  
Wrought Flush, B. K...50¢10¢60¢10¢  
Wrought Shutter...50¢50¢10¢  
Wrought Square Neck...60¢10¢70¢  
Wrought Sunk...50¢10¢60¢5¢  
Ives' Patent Door...60¢60¢10¢

## Stove and Plow—

Plow...60¢10¢60¢  
Stove, list August 27, 1898...63½¢10¢

## Tire—

Common, list Feb. 23, '83...60¢60¢10¢  
American Screw Company:  
Norway Phila., list Oct. 16, '84...70¢  
Eagle Phila., list Oct. 16, '84...75¢  
Bay State, list Feb. 23, '83...60¢  
Franklin Moore Co.:  
Norway Phila., list Oct. 16, '84...70¢  
Eagle Phila., list Oct. 16, '84...75¢  
Colt's, list Feb. 23, '83...60¢  
Port Chester Bolt & Nut Company:  
Empire, list Feb. 23, '83...60¢  
Keystone Phila., list Oct. '84...75¢  
Norway Phila., list Oct. '84...70¢

## Borers, Tap—

Borers Tap, Ring, with Handle:  
Inch...1¼ 1½ 1¾ 2 2½ 3 3½ 4 4½ 5 5½ 6 6½ 7 7½ 8 8½ 9 9½ 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Per doz...\$3.50 4.50 5.00 6.50 7.50 8.50 9.50 10.50 11.50 12.50 13.50 14.50 15.50 16.50 17.50 18.50 19.50 20.50 21.50 22.50 23.50 24.50 25.50 26.50 27.50 28.50 29.50 30.50 31.50 32.50 33.50 34.50 35.50 36.50 37.50 38.50 39.50 40.50 41.50 42.50 43.50 44.50 45.50 46.50 47.50 48.50 49.50 50.50 51.50 52.50 53.50 54.50 55.50 56.50 57.50 58.50 59.50 60.50 61.50 62.50 63.50 64.50 65.50 66.50 67.50 68.50 69.50 70.50 71.50 72.50 73.50 74.50 75.50 76.50 77.50 78.50 79.50 80.50 81.50 82.50 83.50 84.50 85.50 86.50 87.50 88.50 89.50 90.50 91.50 92.50 93.50 94.50 95.50 96.50 97.50 98.50 99.50 100.50

Enterprise Mfg. Co., No. 1, \$1.25; No. 2, \$1.65; No. 3, \$2.50 each...25¢90¢

## Boring Machines—See Machines, Boring.

## Boxes, Mitre—

Seavey's, per doz...\$24.00...25¢

## Braces—

NOTE.—Most Braces are sold at net prices.

Common Ball, American...\$1.10@1.20  
Barber's...10¢10¢10¢60¢10¢  
Fray's Genuine Spotted...50¢10¢5¢  
Fray's No. 70 to 120, 81 to 123, 207 to 414...50¢10¢5¢  
P. S. & W. Co., Peck's Patent...50¢10¢60¢

## Brackets—

Cast Iron, plain...60¢10¢70¢10¢  
Wrought Steel...70¢5¢70¢10¢  
Bradley's Wire Shelf:  
Full cases...60¢  
Broken cases...75¢10¢

## Bright Wire Goods—See Wire and Wire Goods.

## Broilers—

Wire Goods Co...70¢70¢10¢

## Buckets, Well and Fire—See Pails.

## Bucks, Saw—

Hoosier...# gro. \$22.00@24.00

## Bull Rings—See Rings, Bull.

## Butts—Brass—

Wrought list Sept...25¢5¢50¢  
Cast Brass, Tiebout...50¢

## Cast Iron—

Fast Joint, Broad...50¢10¢  
Fast Joint, Narrow...50¢10¢  
Loose Joint...60¢5¢  
Loose Pin...60¢5¢  
Mayer's Hinges...60¢5¢  
Parliament Butts...60¢5¢

## Wrought Steel—

Loose Joint...80¢30¢55¢  
Table and Back Flaps...70¢5¢  
Narrow and Broad...70¢10¢  
Inside Blind...70¢10¢  
Loose Pin...80¢30¢55¢

Bronzed Wrt. Nar. and Inside Blind Butts...50¢10¢50¢10¢5¢

## Cages, Bird—

Hendryx, Brass:  
3000, 5000, 1100 series...25¢  
1200 series...35¢  
200, 300, 600 and 900 series...40¢10¢  
Hendryx Bronze:  
700, 800 series...40¢10¢  
Hendryx Enamelled...40¢10¢

## Calipers—See Compasses.

## Calks, Toe and Heel—

Burke's, One Prong, Blunt...50¢  
Burke's, One Prong, Sharp...50¢  
Burke's, Two Prong, Blunt...50¢  
Burke's, Two Prong, Sharp...50¢  
Burke's, Blunt Heel...50¢  
Burke's, Sharp Heel...50¢

## Can Openers—See Openers, Can.

## Cans, Milk—

Buffalo Pattern: 5 8 10 gal.  
\$3.60 \$4.00 \$4.30  
Illinois Pattern: 2 40 3.10 3.50 \$3.90  
Iowa Pattern: 2 40 3.35 3.75 \$3.90  
20 30 40 qts.  
New York Pattern 3.00 4.35 4.80 \$3.90  
Baltimore Pattern 3.10 4.45 4.70 \$3.90

## Cans, Oil—

Galvanized Blue Band, 1-gal., # doz...\$1.75@2.00  
S. S. & Co., Galvanized Family with faucet, 3-gal., # gro. \$54; 5-gal., #63; 10-gal., \$120.00  
Glass Oil...# doz. \$1.90@2.20

## Caps—Percussion—

Eley's E. B...50¢  
G. D...per M 32¢31¢  
F. L...per M 37¢40¢  
G. E...per M 47¢50¢  
Musket...per M 57¢60¢



## Primers—

Best Primers, \$1.00.....5%  
B. L. Caps (Sturtevant Shells).....5%  
\$1.00.....5%  
All other primers.....\$1.10@1.15

Carpet Stretchers—  
See Stretchers, Carpet.

## Cartridges—

B. B. Caps, Con., Ball Sgd., \$1.90  
B. B. Caps, Round Ball, \$1.12@1.18  
Blank Cartridges:  
32 C. F., \$5.50.....10¢5%  
32 C. F., \$7.00.....10¢5%  
32 cal. Rim, \$1.50.....10¢5%  
32 cal. Rim, \$2.75.....10¢5%  
Central Fire.....25%  
Pistol and Rifle.....15¢5%  
Primed Shells and Bullets.....15¢5%  
Rim Fire Sporting.....50%  
Rim Fire, Military.....15¢5%

## Casters—

Bed.....60¢10%  
Plat.....60¢10%  
Plate, part Brass.....60¢10%  
Philadelphia.....60¢10%  
Martin's Patent (Phoenix).....50¢10%  
Payson's Anti-Friction Furniture.....70¢10%  
Payson's Anti-Friction Truck.....70¢10%  
Standard Ball Bearing.....45%  
Tucker's Patent, low list.....45%

Cattle Leaders—  
See Leaders, Cattle.

## Chain—

American Coil, Full Coaks:  
5-16 1/4 5-16 3/4 7-16 1/2 9-16  
8-75 6-85 5-85 6-00 4-85 4-75 4-65  
1/4 3/4 1 1 1/4  
4-60 4-40 4-20 4-00 cents per lb.  
Less than Coak lots add 1/4 @ 1/2 per lb.  
German Coil, list July 25, '97.....60¢10@60¢10¢10%  
German Halter Chain, list July 25, '97.....60¢10@60¢10¢10%  
Trace, Wagon and Fancy Chains,  
list April, '98.....50¢10@50¢10¢5%  
Jack Chain, list July 10, '98.....50¢5@50¢5@60%  
Iron.....50¢5@60%  
Brass.....50¢5@60%  
Gal. Pump Chain.....1/2 5/4 @ 5/4¢  
Breast, Hitching and Rein Chains  
Coverl. Sack Works.....50%  
Coverl. Mfg. Co.:  
Breast.....35¢5%  
Halter.....35¢5%  
Heel.....35¢5%  
Keln.....35¢5%  
Stallion.....35¢5%  
Onelida Coll. and Halter.....80¢40¢5%  
Niagara Coll. and Halter.....80¢40¢5%  
Niagara Cow Ties.....45¢5@45¢10¢5%  
Am. Coll. and Halters.....50¢10¢5@60%  
Am. Cow Ties.....35¢5@40¢5%  
Wire Goods Co.:  
Dog Chain.....60%  
Universal Dis-Jointed Chain.....45%

## Chalk—(From Jobbers.)

Carpenters', Blue.....gro. 50¢50¢  
Carpenters', Red.....gro. 40¢40¢  
Carpenters', White.....gro. 30¢30¢  
See also Crayons.

## Chalk Lines—See Lines.

## Checks, Door—

Bardley's.....40¢10%  
Columbia.....50¢10%  
Eclipse.....60¢60¢10%

## Chisels—

Socket Framing and Firmer  
Standard List.....70¢10@75¢10%  
Buck Bros.....30%  
Charles Buck.....30%  
Swan's.....70¢10@75¢10%  
L. & J. White.....30¢30¢5%

## Tanged—

Tanged Firmers.....40¢5@40¢10%  
Buck Bros.....30%  
Charles Buck.....30%  
L. & J. White, Tanged.....25¢5%

## Cold—

Cold Chisels, good quality lb. 14¢16¢  
Cold Chisels, fair quality.....lb. 12¢  
Cold Chisels, ordinary.....lb. 8¢30¢

## Chucks—

Beach Pat., each \$8.00.....20%  
Skinner Patent Chucks:  
Combination Lathe Chucks.....40%  
Drill Chucks, Patent and Standard 30%  
Drill Chucks, New Model.....2 1/2%  
Independent Lathe Chucks.....40%  
Improved Planer Chucks.....20%  
Universal Lathe Chucks.....40%  
Face Plate Jaws.....35%  
Union Mfg. Co.:  
Combination.....40%  
Gear Drill.....30%  
Geared Scroll.....30%  
Independent.....40%  
Union Drill.....30%  
Universal.....40%  
Face Plate Jaws.....35%

## Clamps—

Adjustable, Hammers'.....20¢30¢5%  
Adjustable, Sargent's.....30%  
Cabinet, Sargent's.....45¢10%  
Carriage Makers', P. S. & W. Co. 40¢10%  
Carriage Makers', Sargent's.....50¢10%  
Besly, Parallel.....33¢10%  
Lineman's, Ulica Drop Forge & Tool Co. 40%  
Saw Clamps, see Vices, Saw Filers.

## Cleaners, Walk—

Star Socket, All Steel.....\$ doz. \$4.00 net  
Star Shank, All Steel.....\$ doz. \$3.75 net

## Cleavers, Butchers—

Poster Bros.....30%  
New Haven Edge Tool Co. 40¢40¢5%  
Nichols Bros., Flat hdl., 30%; Rd. hdl., 45%  
Payette R. Plumb.....25%  
P. S. & W.....33¢45¢33¢45¢10%

## L. &amp; J. White.....25%

## Clippers—

Chicago Flexible Shaft Company:  
Handy Toilet.....\$ doz. \$7.20  
Mascoite Toilet.....\$ doz. \$8.40  
Monitor Toilet.....\$ doz. \$9.00  
Stewart's Patent.....\$ doz. \$10.00

## Clips, Axle—

Eagle and Superior 1/4 and 5-16 inch.....65¢10@70%  
Norway, 1/4 and 5-16 inch.....65¢65¢5%

## Cloth and Netting, Wire

—See Wire, &c.

## Cocks, Brass—

Hardware list (Globe, Kerosene, Lever Bibbs, Racking, &c.).....60¢10@60¢10¢10%  
Coffee Mills—See Mills, Coffee.

## Collars Dog—

Brass, Pope & Stevens' list.....40%  
Embossed, Gilt, Pope & Stevens' list 30¢10%  
Leather, Pope & Stevens' list.....40%  
Ordinary Goods.....70¢10@75%  
Bemis & Call Hdw. & Tool Co.:  
Dividers.....65%  
Callipers, Call's Patent Inside.....65%  
Callipers, Double.....65¢10%  
Callipers, Inside or Outside.....65¢10%  
Callipers, Wing.....60%  
Compasses.....50¢5%  
J. Stevens A. & T. Co.....25¢10%

## Compasses, Dividers, &amp;c.

Ordinary Goods.....70¢10@75%  
Bemis & Call Hdw. & Tool Co.:  
Dividers.....65%  
Callipers, Call's Patent Inside.....65%  
Callipers, Double.....65¢10%  
Callipers, Inside or Outside.....65¢10%  
Callipers, Wing.....60%  
Compasses.....50¢5%  
J. Stevens A. & T. Co.....25¢10%

## Coolers, Water—

S. S. & Co.: 2-gal., \$14.00; 3-gal., \$16.00; 4-gal., \$18.50; 6-gal., \$23.00.

## Coopers' Tools—

—See Tools, Coopers'.

## Cord—Sash—

Braided, Drab.....lb. \$1@25¢  
Braided, White, Common, lb 15¢1/2@17¢  
Cable Laid Italian.....lb. 18¢; 1/2, 16¢  
Common India.....lb. 8¢5%  
Cotton Sash Cord, Twisted.....lb. 10¢15¢  
Patent Russia.....lb. 12¢15¢  
Cable Laid Russia.....lb. 13¢1/2@15¢  
India Hemp, Braided.....lb. 14¢15¢  
India Hemp.....lb. 12¢15¢  
Patent India.....lb. 10¢15¢  
Pearl Braided, cotton.....lb. 10¢15¢  
Massachusetts, White.....lb. 24¢  
Massachusetts, D. ab.....lb. 24¢  
Eddy, tone Braided Cotton.....lb. 18¢  
Harmony Cable Laid Italian.....lb. 18¢  
Casawan Mills:  
Crown, Solid Braided White.....lb. 12¢15¢  
Braided, Giant, White.....lb. 17¢  
Peerless:  
Cable Laid Italian.....10¢  
Cable Laid Russian.....14¢  
Cable Laid India.....12¢  
Braided India.....18¢  
Phoenix, White.....17¢  
Samson:  
Braided, Drab Cotton.....lb. 31¢  
Braided, Italian Hemp.....lb. 31¢  
Braided, Linen.....lb. 44¢  
Braided, White Cotton, Spot.....lb. 27¢  
Silver Lake:  
A quality, Drab, 40¢.....15¢10%  
A quality, White, 35¢.....15¢10%  
B quality, Drab, 35¢.....15¢10%  
B quality, White, 30¢.....15¢10%  
Italian Hemp, 40¢.....15¢10%  
Linen, 57¢.....15¢10%

## Wire, Picture—

Braided or Twisted.....70¢70¢10%

## Corn Knives and Cutters

—See Knives, Corn.

## Crackers, Nut—

Little Giant.....\$ doz. \$24.00  
Turner & Seymour Mfg. Co.....50%

## Cradles—

Grain.....60%

## Crayons—

White Round Crayons, gross.....5¢6¢  
Cases, 100 gro., \$4.50@5.00, at factory.  
Metal Workers' Crayons, gr. \$2.50  
Soapstone Pencils, round, flat or square.....\$ doz. \$1.50  
Rolling Mill Crayons.....\$ doz. \$3.00  
R. Iraoi Crayons (composition).....\$ doz. \$2.00

## See also Chalk.

## Creamery Pails—See Pails, Creamery.

## Crooks, Shepherds—

Fort Madison, Heavy.....\$ doz. \$7.00  
Fort Madison, Light.....\$ doz. \$6.50

## Crow Bars—See Bars, Crow.

## Cultivators—

Victor Garden.....\$ doz. \$10.00

## Cutters—

Glass—  
Smith & Hemmway Co.....80%  
Meat—  
American.....30%  
Each.....\$ 5 \$7 \$10 \$25 \$50 \$80  
Connecticut:  
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**Lemon Squeezers—**

See Squeezers, Lemon.

**Lifters, Transom—**

Dickson:  
3 x 4 ft. x 1/4".....\$100 \$11.00  
Other sizes Iron.....70¢10¢  
Other sizes, Brass and Bronze.....70¢  
Excelsior.....60¢60¢10¢  
Payson's:  
Solid Grip Nos. 643 and 644, \$100,  
\$11.00  
Bronzed Iron.....70¢

**Lines—**

Wire Clothes, Nos. 18 19 30  
100 feet.....\$3.75 3.50 3.00  
75 feet.....\$1.50  
Ossawa Mills,  
Crown Solid Braided Chalk.....\$3.50  
Mason's, No. 0 to No. 5.....39¢  
Silver Lake Braided Chalk, No. 6, \$6.00;  
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50,  
No. 4, \$8.00; No. 5, \$8.50.

**Locks, &c.— Cabinet—**

Cabinet Locks.....\$3.50 \$3.75 \$7.50

**Door Locks, Latches, &c.—**  
[Net prices are very often made on  
these goods.]

Reading Hardware Co.....40¢  
R. & E. Mfg. Co.....42¢ 0¢  
Sargent & Co.....40¢40¢10¢  
Slaymaker-Barry Co.....30¢35¢  
Snow's Victor.....50¢10¢

**Elevator—**

Stowell's.....88¢4¢

**Padlocks—**

Wrought Iron, list Dec. 3, '97.....  
70¢70¢10¢  
Dog Collar, S. B. Co.....40¢  
R. & E. Mfg. Co. Wrt. Steel and Brass.50¢  
S. B. & Co.....40¢

**Sash, &c.—**

Fitch's Bronze and Brass.....60¢  
Fitch's Iron.....70¢  
Iron Patent.....60¢10¢60¢10¢  
Payson's Perfect.....70¢  
Payson's Signal (new list).....75¢  
Reading.....60¢10¢10¢70¢

**Machines—****Boring—**

Without Augers.  
Upright Angular.  
Improved No. 3.....\$4.25 No. 1 \$5.00  
Improved No. 4.....3.75 No. 2 3.33  
Improved No. 5.....2.75  
Jennings.....2.50 3.00  
Miller's Falls.....4.75  
Snell's, Rice's Pat. 2.50  
Swan's, No. 500.....5.10 No. 900 6.45

**Holisting—**

Moore's Anti-Friction Differential Pul-  
ley Block.....30¢  
Moore's Hand Hoist, with Lock Brake.20¢

**Washing—**

Wayne American, \$27.00  
Western Star, No. 2, \$28.00  
Western Star, No. 3, \$30.00  
St. Louis, No. 41, \$30.00

**Mallets—**

Hickory.....45¢50¢55¢  
Lignumvite.....45¢50¢55¢  
Turners', Hickory and Applewood.....  
doz.....50¢55¢  
Fiber Head Stearns.....50¢10¢

**Mats—**

Elastic Steel (W. G. Co.).....10¢

**Mattocks—**

List Feb. 23, 1899.....65¢65¢10¢

**Meat Cutters—**

See Cutters, Meat.

**Milk Cans—**

See Cans, Milk.

**Mills—**

Coffee—

Box and Side, list Jan. 1, '93.....

60¢50¢60¢10¢5¢

Net prices are often made on some

goods which are lower than above

discounts.

Enterprise Mfg. Co., list Jan. 17, '93.....30¢

National, list Jan. 1, '94.....30¢

Parker's Columbia and Victor.....60¢10¢

Parker's Upright.....30¢10¢40¢

8 x 1 ft., Lane Bros.....30¢

**Mincing Knives—**

See Knives, Mincing.

**Molasses Gates—**

See Gates, Molasses.

**Money Drawers—**

See Drawers, Money.

**Mowers, Lawn—**

Net prices are generally quoted.

10 12 14 16-inch

Cheap.....\$1.75 \$2.00

Good.....3.00 3.25 3.50 3.75

High Grade 4.00 4.25 4.50 4.75

Pennsylvania and Continental 60¢10¢5¢

Quaker City.....70¢5¢

Great American.....70¢5¢

**Philadelphia:**

Styles M. S. C. K. T.....70¢10¢  
Style A, all Steel.....60¢10¢  
Style E, Low Wheel.....60¢10¢  
Style E, High Wheel.....10¢10¢  
Drexel and Gold Coin, low list.....50¢

**Nails—**

Cut and Wire. See Trade Report.  
Wire Nails and Brads, Papered.  
List July 20, 1899.....80¢80¢10¢  
Hungarian, Finishing, Upholster-  
ers', &c. See Tacks.

**Horse—**

Nos. 6 7 8 9 10  
A. C.....25¢ 25¢ 25¢ 21¢ 21¢  
40¢5¢  
Capewell.....10¢ 18¢ 17¢ 16¢ 16¢10¢5¢  
C. B. K.....25¢ 25¢ 22¢ 21¢ 21¢...40¢  
Chaplain.....25¢ 25¢ 25¢ 24¢ 23¢  
40¢5¢2¢  
Maud S.....25¢ 25¢ 22¢ 21¢ 21¢...50¢  
Neponset.....25¢ 21¢ 20¢ 19¢ 18¢...40¢  
Putnam.....25¢ 21¢ 20¢ 19¢ 18¢...33¢4¢  
Standard.....25¢ 21¢ 20¢ 19¢ 18¢...40¢  
Star.....25¢ 21¢ 20¢ 19¢ 18¢...45¢ 5¢  
Vulcan.....25¢ 21¢ 20¢ 19¢ 18¢...33¢4¢5¢

**Picture—**

1 1/2 2 2 1/2 3 3 1/2 in.  
Brass Head. 45 .60 .70 .95 1.00 gro.  
For. Head.....1.10 1.10 1.10 .. gro.

**Nippers, See Pliers and Nippers.****Nut Crackers—**

See Crackers, Nut.

**Nuts—**

List Feb. 1, '99.

Cold Punched. Off

Mfrs. or U. S. Standard. list.

Hexagon, plain.....3.90 \$4.10

Square, plain.....3.90 \$4.10

Square, C. T. &amp; R.....3.70 \$3.90

Hexagon, C. T. &amp; R.....4.20 \$4.40

Hot Pressed:

Mfrs., U. S. or Nar. Gauge Stand.

Square.....4.30 \$4.50

Hexagon.....4.50 \$4.70

NOTE.—Tapped Nuts are now 210c.

higher than above.

**Oakum—**

Best or Government.....lb. 5¢4¢

Navy.....lb. 4¢4¢

U. S. Navy.....lb. 5¢4¢

Plumbers' Spun Navy.....5¢4¢

In carload lots 1/4 lb. off f.o.b. New

York.

**Oil Tanks—See Tanks, Oil.****Oilers—**

Brass and Copper.....40¢10¢50¢

Tin or Steel.....60¢10¢10¢70¢5¢

Zinc.....60¢5¢65¢

Malleable, Hammers' Improved, No. 1.

\$3.80; No. 2, \$4; No. 3, \$4.40 \$ doz. 20¢

Malleable, Hammers' Old Pattern.

same list.....50¢10¢

Wilmet &amp; Hobbs Mfg. Co.....70¢70¢10¢

**Openers, Can—**

French.....doz. 35¢

Iron Handle.....doz. 27¢

Sprague, Iron Hdl. per doz. 35¢40¢

Sardine Scissors.....doz. \$1.75 \$2.00

National, \$ gro.....\$1.75 \$2.00

Stowell's.....per doz. 40¢45¢

**Packing—****Rubber—**

Standard, fair quality.....70¢10¢75¢

Inferior quality.....75¢10¢80¢

Extra.....60¢5¢60¢10¢5¢

Jenkins' Standard, \$ 80¢.....25¢25¢5¢

**Miscellaneous—**

American Packing.....9¢10¢ lb.

Cotton Packing.....13¢14¢ lb.

Italian Packing.....10 1/2¢11 1/2¢ lb.

Jute.....6¢5¢ lb.

Russia Packing.....12¢15¢ lb.

**Pails—****Creamery—**

S. S. &amp; Co., with gauges.. No 1 \$6.50;

No. 2, \$6.75 \$ doz.

**Galvanized—**

Inch.....10 12 14

Water, Standard,

gro.....\$23.00 \$26.00 \$29.00

Water, Regular.. 19.00 \$22.00 25.00

Water, Heavy.....22.00 25.50 28.00

Fire, Rd. Bottom,

gro.....\$1.00 \$3.00 \$5.00

Well, gro.....\$7.00 \$9.00 \$1.00

**Pans—****Dripping—**

Large Sizes.....lb. 4¢4¢

Small Sizes.....lb. 5¢4¢

Fry—

Standard List.....75¢10¢80¢

**Roasting and Baking—**

Regal, S. S. & Co., \$ doz. Nos. 5, \$4.50;  
10, \$5.00; 20, \$5.50; 30, \$6.00  
Simplex, \$ gro. No. 40, \$30.00; 50,  
\$34.50; 60, \$39.00; 140, \$33.00; 150,  
\$37.50; 160, \$43.00.

**Paper—****Building Paper—**

Per roll  
Rosa Sized Sheathing: 500 sq. ft.  
Light wt., 20 sq. ft. to lb. \$0.40 \$0.45  
Medium wt., 12 sq. ft. to lb. \$0.60 \$0.65  
Heavy wt., extra quality, \$0.95 \$1.05  
Medium Grades Water Proof  
Sheathing.....\$0.80 \$1.25  
Deafening Felt, 9, 6 and 4 1/2 sq. ft.  
to lb., ton.....\$45.00 \$50.00  
York Haven Waterproof Sheathing.....  
\$1.35 \$1.75

**Tarred Paper.**

1 ply (roll 900 sq. ft.), ton. \$35.00 \$40.00  
2 ply, roll 100 sq. ft. .... 90¢  
3 ply, roll 100 sq. ft. .... \$1.20

**Sand and Emery—**

List April 19, 1896.50¢10¢50¢10¢10¢

**Parers—****Apple—**

Advance.....\$ doz. \$4.50  
Baldwin.....\$ doz. \$5.00  
Bonanza.....each \$5.00  
Dandy.....each \$7.50  
Eureka.....each \$16.00  
Family Bay State.....\$ doz. \$12.00  
Hudson's I. I. Star.....\$ doz. \$4.00  
Hudson's Rocking Table.....\$ doz. \$5.50  
Improved Bay State \$ doz. \$27.00 \$30.00  
New Lightning.....\$ doz. \$5.50  
Reading 75.....\$ doz. \$4.00  
Reading 75.....\$ doz. \$7.00  
Turn Table '06.....\$ doz. \$5.50  
White Mountain.....\$ doz. \$4.00

**Potato—**

Saratoga.....\$ doz. \$5.50

White Mountain.....\$ doz. \$4.50

**Picks and Mattocks—**

List Feb. 23, 1899.....65¢65¢10¢

**Pinking Irons—**

See Irons, Pinking.

**Pins—****Escutcheon—**

Brass.....60¢60¢5¢

Iron, list Nov. 11, '85.....60¢60¢5¢

**Pipe, Cast Iron Soil—****Factory Shipments.**

Standard, 2-6 in.....60¢50¢10¢

Extra Heavy, 2-6 in.....60¢10¢60¢

Fittings.....60¢60¢10¢

**Pipe, Wrought Iron—****Factory Shipments.**

List February, 1899.

Plain and Galvanized:

Carload lots.....50¢10¢10¢

Less than carload lots.....50¢10¢2 1/2¢

Screw and Socket Casing.....37 1/2¢5¢

Inserted Joint Casing.....32 1/2¢5¢

Cold Drawn Seamless Steel Tubing.....  
60¢**Planes and Plane Irons—****Wood Planes—**

Molding.....40¢2 1/2¢10¢5¢

Bench, First quality.....45¢10¢15¢10¢5¢

Bench, Second quality.....50¢10¢50¢10¢5¢

Bailey's (Stanley R. & L. Co.)  
50¢10¢10¢50¢10¢10¢10¢

Gage Self Setting.....35¢

**Iron Planes—**

Bailey's (Stanley R. &amp; L. Co.).....

50¢10¢10¢50¢10¢10¢10¢

Chaplin's Iron Planes.....50¢10¢

Miscellaneous Planes (Stanley R. & L.  
Co.).....25¢10¢10¢25¢10¢10¢10¢

Sargent's.....50¢10¢60¢

**Plane Irons—**

Wood Bench Plane Irons... 50¢10¢

Buck Bros.....30¢

Butcher's.....\$5.00 \$5.35 to 5

Stanley R. &amp; L. Co. 50¢10¢50¢10¢10¢

L. &amp; J. White.....20¢5¢25¢

**Plates—**

Felloe.....lb. 3 1/2¢2 1/2¢

Self-Sealing Pie Plates (S. S. & Co.), \$  
doz. \$3.00**Pliers and Nippers—**

Button Pliers.....65¢10¢70¢5¢

Gas Burners, per doz. 5 in., \$1.15 \$

\$1.30; 6 in., \$1.50 \$1.45.

Gas Pipe 7 8 10 12-in.  
\$1.75 \$2.00 \$2.75 \$3.75

Acme Nippers.....40¢40¢5¢

Bernard's

Parallel Pliers, &amp;c.....38¢4¢

Paragon Pliers.....50¢

Lodi Pliers.....50¢

Elm City Fence Pliers.....33¢4¢

**Heller's Farriers' Pincers and Tools.**

40¢40¢5¢

Morrill's Parallel, \$ doz. \$12.00, \$30¢5¢

P. S. &amp; W. Cast Steel.....30¢10¢40¢

P. S. & W. Tinners' Cutting Nippers.....  
40¢40¢5¢

Utica Drop Forge &amp; Tool Co.

Pliers and Nippers, all kinds.....40¢

**Plumbs and Levels—****Plumbs and Levels.**

70¢10¢10¢75¢10¢10¢

Dialton's.....70¢

Pocket Levels.....70¢10¢10¢75¢10¢

Stanley R. &amp; L. Co. 70¢10¢10¢75¢10¢10¢

Stanley's Duplex.....25¢10¢25¢10¢10¢

Woods' Extension.....33¢4¢

**Poachers, Egg—**

Buffalo Steam Egg Poachers, \$ doz.

No. 1, \$7.20; No. 2, \$11.00; No. 3,  
\$11.00; No. 4, \$14.50.....50¢**Points, Glaziers'—**

Bulk and 1 lb. papers.. lb. 10 1/4¢11 1/4¢

1/2-lb. papers.....lb. 11 1/2¢12 1/2¢

3/4-lb. papers.....lb. 11 1/2¢12 1/2¢

**Pokes, Animal—**

Ft. Madison Pawkeys.....\$ doz. \$3.25

Ft. Madison, Western.....\$ doz. \$3.75

**Police Goods—**

Manufacturers' Lists.....25¢25¢5¢

Tower's.....25¢

**Polish—Metal—**

Prestoline Liquid, No. 1 (1/2 pt.), \$ doz.

\$3.00; No. 2 (1 qt.), \$9.75.....40¢

Prestoline Paste.....33¢40¢

U. S. Metal Polish Paste, 3 oz. boxes, \$

**Pulleys—**

Hay Fork, Swivel or Solid Eye	doz. \$1.60@2.00
Hay Fork, Stowell's Anti-Friction, 5-in. Wheel, # doz. \$12.00	40%
Hot House, Awning, &c.	60% @ 80% @ 10%
Japanned Clothes Line	60% @ 80% @ 10%
Japanned Screw	70% @ 10% @ 10%
Japanned Side	70% @ 10% @ 10%
Stowell's Ceiling or End Anti-Friction	80%
Stowell's Dumb Walter, Anti-Friction	60% @ 10%
Stowell's Electric Light	60%
Stowell's Side, Anti-Friction	80% @ 10%
Sash (Auger Mortise)	
Common Sense, 1 1/4 in., # doz. 20#	2 in., 22#
Empire	1 1/4 in., 17#; 2 in., 19#
I. C.	1 1/4 in., 15#; 2 in., 17#
Ideal No. 13	1 1/4 in., # doz. 20#
Improved	1 1/4 in., 17#; 2 in., 19#
Niagara	1 1/4 in., 16#; 2 in., 18#
No. 20, Troy	1 1/4 in., 16#; 2 in., 18#
Star	1 1/4 in., 16#; 2 in., 18#
Acme	1 1/4 in., 16#; 2 in., 18#
Tackle Blocks—See Blocks.	

**Pumps—**

Cistern	60% @ 60% @ 75%
Pitcher Spout	70% @ 10% @ 75%
Pump Leathers, all sizes	gro. \$6.00
Flint & Walling's Fast Mail	50% @ 55%
Flint & Walling's Pitcher Spout	70% @ 10%
Loud's Suction Pumps, U. B. Co.	20%
Myer's Pumps, low list	50%
Contractors' Rubber Diaphragm Non-chokable, B. & L. Block Co.	20%

**Punches—**

Revolving (4 tubes)	doz. \$3.50@3.75
Saddlers' or Drive, good	doz. 65@70c
Spring, good quality	\$1.70@1.80
Bemis & Call Co.'s Cast Steel Drive	50% @ 55%
Bemis & Call Co.'s Check	55%
Bemis & Call Co.'s Spring	50% @ 55%
Niagara Hollow Punches	45%
Niagara Solid Punches	55%
Spring, Leach's Pat.	15%
Steel Screw, B. & K. Mfg. Co.	40%
Tinners' Hollow, P. S. & W. Co.	35% @ 35% @ 55%
Tinners' Solid, P. S. & W. Co.	# doz., \$1.44

**Rail—****Barn Door, &c.—**

Barn Door, Light, 1/2 in. 5/8 3/4	100 feet	\$2.00 \$2.50 \$3.00
B. D., for N. E. Hangers:		
Small	Med.	Large.
100 feet	\$2.30	\$2.70 3.20
Sliding Door, Bronzed Wrt Iron,	ft. 6 1/2	
Sliding Door, Iron Painted	2 1/2 @ 3c	
Sliding Door, Wrought Brass, 1 1/4 in.	lb. 36c.	30%
Cronk's Double Braced Steel Rail, # foot.	3 1/2	
Lanes' O. N. T., # 100 ft., 1 inch.	\$3.00	
Lanes' Standard, # 100 ft.	4.25	
Lawrence Bros., # 100 ft.	4.35	
McKinney's None Better	ft. 3 1/2	
McKinney's Standard	ft. 3 1/2	
Moore's, Wrt. Bracket, Steel	8 1/2	
Stowell's Steel Rail, Plain	15%	

**Rakes—**

Aug 1, 1899, List:		
Cast Steel	70% @ 55%	
Malleable	66% @ 55%	
Fort Madison Red Head Lawn	\$3.25	
Fort Madison Blue Head Lawn	\$3.00	

**Rasps, Horse—**

Dist m's	75%
Hill Bros.	60% @ 10% @ 0%
New Nicholson Horse Rasp	70% @ 10%
See also Files.	

**Razor Stropps—**

See Stropps, Razor.

**Reels—****Fishing—**

Hendryx Aluminum, German Silver, Gold, Bronze, Silver, Rubber, Popolo and Salmon, Single Action, Multiplying and Quadruple, all sizes.	25%
Hendryx Single Action Series, 102P and PN, 202P and PN, 102 PR and PN, 202 PR and PN, 804 P and PN, 00304P and PN, 503 and 502N, 802 and 802N, 02084N, Competitor, 50%	
Hendryx Multiplying and Quadruple Series, 3004N and PN, 4N and PN, 2904N, 2904P and PN, 002904PN, 0924 and 0924N, 5009N and PN.	40% @ 10%

**Registers—**

For points on Mississippi River and East:		
Black Japanned	30% @ 10%	
White Japanned	30% @ 10%	
Bronzed Finishes	30%	
Nickel Plated	30% @ 10%	
Electro Plated in Brass, &c.	30% @ 10%	
White Porcelain	30%	
Solid Brass and Bronze Metal	30%	
Note.—Higher prices are quoted in territory further West.		

**Rings and Ringers—****Bull Rings—**

	2	2 1/2	3 Inch
Steel	\$0.75	0.85	0.85 doz.
Copper	1.10	1.30	1.50 doz.

**Hog Rings and Ringers—**

Hill's Rings	gro. boxes, \$1.50@5.00
Hill's Ringers, G. I.	doz. 75c
Blair's Rings	# gr. \$5.75@6.00
Blair's Ringers	# doz. \$0.90@1.00
Brown's Rings	# gr. \$6.00@6.25
Brown's Ringers	# doz. \$1.00@1.10
Perfect Rings	# gr. \$6.00@6.50
Perfect Ringers	# doz. \$1.25@1.35

**Rivets and Burrs—**

Copper	40% @ 10% @ 50%
Iron or Steel:	
Tinners'	65% @ 52% @ 10%
Miscellaneous	52% @ 52% @ 10%

**Rivet Sets—See Sets.****Roasting and Baking****Pans—See Pans, Roasting and Baking.****Rollers—**

Acme, Stowell's Anti-Friction	50%
Barn Door, Sargent's list	60% @ 10% @ 70%
Lane's, Stay	33% @ 55%
Stowell's Barn Door Stay	# doz. \$1.25

**Rope—**

Manila, 7-16 in. and larger.		
Manila	lb. @ 15 1/2 c	
Manila, 1/4 and 5-16 in. lb.	@ 10 c	
Manila, Tarred Rope, 15 thread	lb. @ 15 1/2 c	
Manila Hay Rope Med m. lb.	@ 15 1/2 c	
Sisal, 7-16 in. and larger, lb.	@ 10 1/2 c	
Sisal, 1/4 and 5-16 in. lb.	@ 11 c	
Sisal, Hay Rope, 2 to 10 ply	lb. @ 10 1/2 c	
Sisal, Tarred, Medium	lb. @ 10 c	
Lath Yarn	lb. @ 10 c	
Cotton Rope:		
Best, 1/4 in. and larger	lb. 13 @ 14 c	
Med m. 1/4 in. and larger	lb. 10 @ 13 c	
Com., 1/4 in. and larger, lb.	8 @ 10 c	
Jute Rope, No. 1, 1/4 in. and up	lb. @ 7 c	
Jute Rope No. 2, 1/4 in. and up	lb. @ 6 1/2 c	
Note.—Carload lots, except on Jute Rope, 1/4 c. per lb. less than above.		

**Wire Rope—**

List July 1, '99	30% @ 1/2 %
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**Ropes, Hammock—**

Covert Mfg. Co.	45% @ 25%
Covert Saddlery Works	60%
Rules—	
Boxwood	75% @ 10% @ 10% @ 75% @ 10% @ 10%
Ivory	40% @ 10% @ 10% @ 40% @ 10% @ 10%
Larkin's Steel	50% @ 10%
Larkin's Lumber	50% @ 10%
Stanley R. & L. Co.	50% @ 10%
Boxwood	75% @ 10% @ 10% @ 75% @ 10% @ 10%
Ivory	40% @ 10% @ 10% @ 40% @ 10% @ 10%

**Sad Irons—See Irons, Sad.****Sand and Emery Paper and Cloth—**

See Paper and Cloth.

**Sash Cords—See Cord, Sash.****Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

**Sausage Stuffers or Fillers—See Stuffers or Fillers, Sausage.****Saw Frames—**

See Frames, Saw.

**Saw Sets—See Sets, Saw.****Saw Tools—See Tools, Saw.****Saws—**

Note.—Extra 5% often given on Circulars, Cross Cuts, &c., and extra 5% @ 7 1/2 on Hand, Butcher, &c.		
Atkins' Circular	50%	
Atkins' Band	50%	
Atkins' Cross Cuts	40%	
Atkins' Mulay, Mill and Drag	50%	
Atkins' One-Man Saw	40% @ 10%	
Atkins' Wood Saws	40% @ 10%	
Atkins' Hand, Compass, &c.	40%	
Daston Circular Solid and Insert	50%	
Tooth	50%	
Daston Band 2 to 14 in. wide	60%	
Daston Band 1/4 to 1 1/2 in.	70%	
Daston Crosscuts	50%	
Daston Narrow Crosscuts	55%	
Daston Mulay, Mill and Drag	50%	
Daston Framed Woodsaws	35%	
Daston Woodsaw Blades	40%	
Daston Woodsaw Rods	25%	
Daston Hand Saws, Nos. 12, 99, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100	25%	
Daston Hand Saws, Nos. 1, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200	30%	
Daston Compass, Keyhole, &c.	25%	
Daston Butcher Saws and H. Saws	35%	
C. E. Jennings & Co.'s	25% @ 30% @ 55%	
Peace Circular and Mill	50%	
Peace Cross Cuts, list Jan. 1, '99	50%	
Peace Hand, Panel and Rip	30%	
Richardson's Circular and Mill	50%	
Richardson's X Cuts, list Jan. 1, '93	45% @ 10% @ 55%	
Richardson's Hand, &c.	30%	
Simonds' Circular Saws	50%	
Simonds' Crescent Ground Cross Cut Saws	35%	
Simonds' One-Man Cross Cuts	40% @ 10%	
Simonds' Gang Mill, Mulay and Drag Saws	45% @ 45% @ 55%	

**Hack Saws—**

Daston Keystone	25%
Daston Hack Saw Frames	30%
Griffin's complete	50% @ 50% @ 10%
Griffin's Hack Saw Blades	50% @ 50% @ 10%
Star Hack Saws and Blades	15% @ 10%

**Scroll—**

Barnes' No. 7	\$15	25%
Barnes' Scroll Saw Blades	40%	
Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18		
with boring attachment, \$30	20%	
Lester, complete, \$10.00	15% @ 10%	
Rogers, complete \$4.00	15% @ 10%	

**Scale Beams—**

See Beams, Scale.

**Scales—**

Family, Turnbull's	80% @ 90% @ 10%
Hatch, Counter:	
Platform, 4 lb. by 1/2 oz.	doz. \$5.75
Two Platforms, 8 lb. by 1/2 oz.	doz. \$16.00
Union Platform, Plain	\$2.00 @ 2.10
Union Platform, Striped	\$2.15 @ 2.25
Chattillon's Eureka	25%
Chattillon's Favorite Trip Scales	40%
Chattillon's Grocers' Trip Scales	50%
Pelouze Scales—Family, Candy, Grocers' and Postal	New list net
"The Standard" Portables	45%
"The Standard" R. R. and Wagon	50%

**Scrapers—**

Box, 1 Handle	doz. \$2.25 @ 2.75
Box, 2 Handle	doz. \$2.75 @ 4.00
Ship, No. 1, doz.	\$3.50; No. 2, \$2.25 @ 3.50
Adjustable Box Scraper (S. R. & L. Co.)	\$4.00
Foot, W. E. Pratt Mfg. Co.	# doz. \$1.15 @ 1.25

**Screen Window and Door Frames—See Frames.****Screw Drivers—**

See Drivers, Screw.

**Screws—**

**Screws—**

**Bench and Hand—**

Bench, Iron, doz. 1 in., \$2.50 @ 2.75 ;  
1 1/4, \$2.85 @ 3.10 ; 1 1/2, \$3.85 @ 3.50

Bench, Wood, Beech, doz. \$3.50 @ 2.75

Hand, Wood ..... 35 @ 40

Hand, Grand Rapids ..... 35

**Coach, Lag and Hand Rail—**

Lag, Common Point, list Oct. 1, '99	65% @ 5%
Coach and Lag, Gimlet Point, list Oct. 1, '99	65%
Hand Rail, list Jan. 1, '81	82% @ 2%

**Jack Screws—**

Millers Falls	50% @ 10% @ 10%
Millers Falls, Roller	50% @ 10%
P. S. & W.	40% @ 40% @ 10%
Sargent	80% @ 80% @ 10%

**Machine—**

List Jan. 1, '98		
Flat or Round Head, Iron	50%	
Flat or Round Head, Brass	50%	

**Set and Cap—**

Set (Iron or Steel)	60%
Sq. Hd. Cap	55%
Hex. Hd. Cap	60%

**Wood—**

List Nov. 10, 1898. Discounts adopted June 25, '99.		
Flat Head, Iron	90%	
Round Head, Iron	75%	
Flat Head, Brass	77 1/2%	
Round Head, Brass	72 1/2%	
Flat Head, Bronze	72 1/2%	
Round Head, Bronze	70%	
Drive Screws	82 1/2%	
Note.—An extra 5 or 10% is often given.		

**Scroll Saws—See Saws, Scroll.****Scythes—****Scythe Snaths—**

See Snaths, Scythe.

**Seeders—**

Enterprise	25% @ 30%
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**Sets—**

Brad Axl and Tool Sets:		
Wood Hdl., 10 Axl's doz.	\$2.00 @ 2.25	
Wood Hdl., 15 Axl's, 6 Tools	doz. \$3.50 @ 2.60	

Atken's Sets, Aw and Tools:		
No. 20, # doz.	\$10.00 @ 10% @ 10% @ 25%	
Frays' Adj. Tool Hdl's	Nos. 1, \$12;	
\$18; 3, \$12; 4, \$9; 5, \$7.	50%	
Millers Falls Adj. Tool Hdl's, No. 1	\$12; No. 4, \$12; No. 5, \$18	15% @ 10%
Stanley's Excelsior	No. 1, \$7.50; No. 2, \$4.00; No. 3, \$5.50	40% @ 10% @ 10%

**Garden Tool Sets—**

Ft. Madison Rakes, Shovel and Hoe	# doz. \$9.00
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**Nail—**

Round, assorted	gro. \$3.25 @ 3.75
Octagon	gro. \$4.25 @ 4.75
Knurled, Good	gro. \$6.00 @ 6.50
Buck Brothers	27 1/2%
Cannon's Diamond Point	# gr. \$12.25
Snell's Corrugated, Cup Pt.	50%
Snell's Knurled, Cup Pt.	66 1/2%

**Rivet—**

Regular list	70% @ 70% @ 10% @ 5%
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**Saw—**

Atken's Genuine	# doz. \$4.50 @ 5.00
Atken's Imitation	# doz. \$3.



**Shovels and Tongs—**

Brass Head.....60¢5@60¢10¢  
 Iron Head.....60¢5@60¢10¢

**Sieves and Sifters—**

Hunter's Imitation, gro. \$11.00@12.00  
 Buffalo Metallic Blued, S. S. & Co., gr.:  
 14 & 18.....18¢20  
 12 & 16.....13.80  
 Eclipse.....gr. \$15.00  
 Electric Light.....gr. \$12.00  
 Hunter's Genuine.....gr. \$12.50  
 Shaker (Barler's Pat.) Flour Sifters.....  
 gr. doz., \$2.00.....\$35

**Sieves, Wooden Rim—**

Mesh 18, Nested, doz.....\$0.75@0.80  
 Mesh 20, Nested, doz......85@.90  
 Mesh 24, Nested, doz.....1.00@1.05

**Sinks—**

**Cast Iron—**  
 Low list.....65¢@65¢5¢  
 Note.—The low list is now generally  
 used, but some jobbers use high list.

**Wrought Steel—**

Columbus Galv'd and Enamelled.....60¢5¢  
 Columbus, Painted......45¢  
 L. & G......52¢

**Skins, Wagon—**

Cast Iron.....70¢@70¢10¢  
 Malleable Iron.....40¢10¢50¢  
 Steel......85¢@.90¢  
 I. L. & B. Co. Steel......35¢

**Slates—**

"D" Slates.....50¢10¢50¢10¢10¢  
 Unexcelled Noiseless Slates.....  
 60¢5¢ tens@60¢5¢ tens@5¢  
 Wire Bound......40¢10¢50¢  
 Double Slates, add \$1 case, net.

**Slaw Cutters—See Cutters.****Snap, Harness—**

German.....40¢@40¢10¢  
 Covert Mfg. Co.:  
 Heavy......85¢2¢  
 High Grade......45¢2¢  
 Jockey......40¢2¢  
 Trojan......45¢2¢  
 Covert's Saddlery Works:  
 Banner......80¢10¢  
 Crown......60¢10¢  
 Triumph......80¢10¢  
 W. & E. T. Fitch Co.:  
 Bristol.....40¢10¢  
 Empire.....50¢5¢  
 German.....40¢  
 National.....50¢5¢  
 Perfect......45¢  
 Clipper.....50¢5¢  
 Champion......40¢  
 Security......90¢5¢  
 Victor......80¢5¢  
 O. & A. Comm. Co.:  
 Solid Steel......65¢@65¢10¢  
 Solid Swivel......58¢1@.65¢10¢  
 Sargent's Patent Guarded.....  
 60¢5¢@60¢5¢10¢

**Snaths—**

Scythe......45¢5¢

**Snips, Tinnners'—See Shears****Soldering Irons—**

See Irons, Soldering.

**Spoke Trimmers—**

See Trimmers, Spoke.

**Spoons and Forks—****Silver Plated—**

Flat Ware.....50¢10¢@60¢10¢  
 Wm. Rogers Mfg. Co.....50¢10¢

**Miscellaneous—**

German Silver.....60¢10¢  
 Wm. Rogers Mfg. Co.:  
 18 German Silver.....60¢  
 Rogers' Silver Metal.....50¢10¢

**Springs—**

**Door—**  
 Gem (Coll.).....20¢  
 Star (Coll.).....30¢  
 Torrey's Rod, 3/4 in., gr. doz. \$1.10@1.25  
 Warner's No. 1, gr. doz. \$1.50; No. 2,  
 \$3.40.....55¢@55¢10¢  
 Victor (Coll.).....60¢10¢@60¢10¢5¢

**Carriage, Wagon, &c.**

1 1/4 in. and wider.....Blk. Hf Brl. Brl.  
 Tested and Temp 5 1/4 5 1/4 6c lb  
 Oil Tested and  
 Tempered.....6 1/4 6 1/4 7c lb  
 Cliff's Bolster Springs......3¢  
 Cliff's Seat Springs.....gr pair 53¢

**Sprinklers, Lawn—**

Enterprise.....25¢@30¢  
 Philadelphia No. 1, gr. doz. \$12; No. 2,  
 \$15; No. 3, \$24.....30¢

**Squares—**

Nickel plated.....List May 1, '95.  
 Steel and Iron.....70¢@70¢5¢  
 Rosewood Hdl. Try Square and T-  
 Bevels.....60¢10¢10¢@70¢  
 Iron Hdl. Try Squares and T-Bevels.....  
 40¢10¢@40¢10¢10¢

**Diston's Try Sq. and T-Bevels.....60¢10¢****Winterbottom's Try and Miter.....50¢10¢****Squeezers—**

**Lemon—**  
 Wood, Common, gro. No. 6 \$5.00;  
 No. 1, \$6.50; No. 2, \$10.00.  
 Wood, Porcelain Lined:  
 Cheap.....doz. \$3.00@5.75  
 Good Trade.....doz. \$3.00@5.50

Tinned Iron.....doz. \$0.80@1.25  
 Iron, Porcelain Lined doz. \$3.25@5.50  
 Jennings' Star.....gr. doz. \$1.85@1.90  
 King.....gr. doz. \$2.00

**Staples—**

Barbed Blind.....lb. 9¢@10¢  
 Electricians' Association list, 75¢10¢  
 Fence Staples, same price as Barbed  
 Wire. See Trade Report.  
 Poultry Netting.....80¢10¢  
 Grand Crossing Tack Co.'s list.....75¢10¢

**Steels, Butchers'—**

Dick's.....40¢  
 Foster Bros.....30¢  
 C. & A. Hoffmann's.....40¢  
 Nichols Bros.....50¢

**Steelyards.....25¢@25¢10¢****Stocks and Dies—**

Blacksmiths'.....40¢  
 Gardner.....50¢  
 O. & N. River.....25¢  
 Lightning Screw Plate......25¢  
 Little Giant......25¢  
 Revco's New Screw Plates......25¢30¢  
 Curtis Reversible Ratchet Die Stock......25¢

**Stone—****Scythe Stones—**

Pike Mfg. Co., list '95-'96.....33¢4¢  
 Cleveland Stone Co., list Nov., '92.....33¢4¢

**Oil Stones, &c.**

Pike Mfg. Co.:  
 Hindostan No. 1, gr. doz. 8¢  
 Sand Stone......5¢  
 Turkey Oil Stone, Extra.....33¢4¢  
 5 to 8 in.....80¢  
 Turkey Slips.....\$1.50  
 Lily White Washita......60¢  
 Rosy Red Washita......60¢  
 Washita Stone, Extra......50¢  
 Washita Stone, No. 1......40¢  
 Washita Stone, No. 2......30¢  
 Lily White Slips......90¢  
 Rosy Red Slips......90¢  
 Washita Slips, Extra......80¢  
 Washita Slips, No. 1......70¢  
 Arkansas Stone, No. 1, 3 to 5 in., \$2.50  
 Arkansas Stone, No. 1, 5 to 8 in., \$3.50  
 Tanite Mills:  
 Emery Oil, gr. doz. \$5.00.....50¢@60¢

**Stoners—****Cherry—**

Enterprise.....25¢@30¢

**Stops, Bench—**

Millers Falls.....15¢10¢  
 Morrill's... gr. doz., No. 1, \$10.00; No. 2,  
 \$11.00, 40¢20¢

**Stops, Window—**

Ives' Patent.....25¢5¢  
 Taplin's.....45¢

**Stove Boards—**

See Boards, Stove.

**Stove Polish—See Polish, Stove.****Straps, Box—**

Cary's Universal case lots.....20¢10¢

**Stretchers, Carpet—**

Cast Iron, Steel Points.....doz. 55¢@65¢  
 Cast Steel, Polished.....doz. \$2.25  
 Socket.....doz. \$1.75

**Stuffers, Sausage—**

Miles' Challenge, gr. doz. \$20.....50¢50¢5¢  
 Enterprise Mfg. Co.....25¢@25¢7¢1¢  
 National Specialty Mfg. Co., list Jan.  
 1, '97.....30¢

**Tacks, Brads, &c.—**

List Jan. 15, '99.  
**Carpet Tacks:**  
 American Blued.....90¢@90¢10¢  
 American Tinned.....90¢@90¢10¢  
 American Cut Tacks.....85¢10¢@85¢10¢10¢  
 Swedes Iron Tacks.....90¢@90¢10¢  
 Swedes Upholsterers' Tacks.....90¢@90¢25¢  
 Gimp Tacks.....90¢@90¢25¢  
 Lace Tacks.....90¢@90¢25¢  
 Trimmers' Tacks.....60¢@90¢10¢  
 Looking Glass Tacks.....70¢@70¢10¢  
 Bill Posters' and Railroad Tack.....90¢20¢@90¢25¢  
 Hungarian Nails.....80¢5¢@80¢15¢  
 Common and Patent Brads.....70¢5¢  
 Trunk and Clout Nails.....75¢5¢@75¢10¢5¢

**Miscellaneous—**

Double Point Tacks.....90¢5¢@90¢10¢  
 Steel Wire Brads, R. & E. Mfg.  
 Co.'s list.....50¢10¢@60¢  
 See also Nails, Wire.

**Tanks, Oil—**

Emerald, S. S. & Co.....30-gal. \$3.2  
 Emerald, S. S. & Co.....80-gal. \$4.00  
 Queen City S. S. & Co., 0-gal.....\$3.50  
 Queen City S. S. & Co., 60-gal.....\$4.25

**Tapes, Measuring—**

American Asses' Skin.....40¢10¢50¢  
 Patent Leather.....25¢@30¢5¢  
 Steel.....40¢10¢55¢  
 Chesterman's.....25¢@25¢5¢  
 Eddy's Steel.....40¢10¢55¢  
 Eddy's Metallic.....33¢@33¢5¢  
 Keuffel & Esser Co., Steel and Metallic  
 Lower list, 1899.....35¢  
 Lufkin's Steel.....33¢@33¢5¢  
 Lufkin's Metallic.....30¢5¢

**Thermometers—**

Tin Case.....80¢@80¢10¢

**Ties, Bale—Steel.**

Standard Wire.....50¢10¢5¢

**Ties, Wall—**

Cleveland, Steel.....\$1000, \$10.00

**Tinners' Shears, &c.—**

See Shears, Tinnners', &c.

**Tinware—**

Stamped, Japanned and Pleased, sold  
 very generally at net prices.

**Tire Benders, Upsetters,**

&c.—See Benders and Upset-  
 ters, Tire

**Tobacco Cutters—**

See Cutters, Tobacco

**Tools—****Coopers'—**

L. & I. J. White.....20¢@20¢5¢

**Saw—**

Atkins' new list.....40¢  
 Simonds' Improved.....33¢4¢  
 Simonds' Crescent......25¢

**Ship—**

L. & I. J. White.....25¢

**Transom Lifters—**

See Lifters, Transom.

**Traps— Game—**

Oneida Pattern.....70¢10¢@75¢5¢  
 Newhouse......45¢50¢  
 Hawley & Norton......65¢5¢70¢  
 Victor (Oneida Pattern).....75¢75¢10¢  
 Star (Blake Pattern).....85¢10¢@80¢5¢

**Mouse and Rat—**

Mouse, Wood, Choker, doz. holes, 9@10c  
 Mouse, Round or Square Wire.....  
 doz. \$0.85@1.00

**Marty French Rat and Mouse Traps**

(Genuine):  
 No. 1, Rat, gr. doz. \$12.00; case of '24  
 \$10.50  
 No. 3, Rat, gr. doz. \$5.50; case of 50  
 \$5.00  
 No. 3 1/2, Rat, gr. doz. \$1.50; case of 72  
 \$1.00  
 No. 4, Mouse, gr. doz. \$3.50; case of 72  
 \$2.75  
 No. 5, Mouse, gr. doz. \$2.75; case of 150  
 \$2.25  
 Schuyler's Rat Killer, No. 1, gr. \$30.00;  
 No. 2, gr. \$30.00; Mouse, No. 3,  
 \$18.00.....5¢  
 Out of Sight, Mouse, No. 1, gr. doz. 60¢;  
 Rat, No. 2, \$1.25; Mole, \$3.00;  
 Gopher, \$1.50; Stop Thief, No. 1,  
 \$1.25; No. 2, \$1.50.

**Flv—**

Balloon, Globe or Acme.....  
 doz. \$1.25; gro. \$11.50@15.00  
 Harper, Champion or Paragon  
 doz. \$1.50; gro. \$17.00

**Trimmers, Spoke—**

Bonney's Nos. 1 and 2.....40¢  
 Stearns'.....25¢

**Trowels—**

Di-ston Brick and Pointing.....80¢  
 Di-ston Plastering......25¢  
 Di-ston "Standard Brand" and Ga-  
 den Trowels.....40¢  
 Never-Break steel Garden Trowels.....  
 gro. \$7.00  
 Peace's Plastering......30¢  
 Rose Brick and Plastering.....25¢5¢  
 Woodrough & McFarlin, Plastering.....25¢10¢

**Trucks, Warehouse, &c.—**

B. & L. Block Co.'s list.....40¢  
 Daisy Stove Trucks, Improved pattern  
 gr. doz. \$18.00

**Tubs, Wash—**

No. 1 2 3  
 Galvanized, per doz. \$5.00 5 50 6.00  
 Galv. nized S. S. & Co., with Wringer  
 Attachment, gr. doz. \$7.35  
 No. 20, \$7.75; No. 30.....\$9.25

**Twine—****Miscellaneous—**

Flax Twine.....BC B.  
 No. 9, 1/4 and 1/2-lb. Balls.....26¢  
 No. 12, 1/4 and 1/2-lb. Balls.....22¢  
 No. 13, 1/4 and 1/2-lb. Balls.....19¢  
 No. 14, 1/4 and 1/2-lb. Balls.....19¢  
 No. 24, 1/4 and 1/2-lb. Balls.....15¢  
 No. 26, 1/4 and 1/2-lb. Balls.....15¢  
 Chalk Line, Cotton, 1/2-lb. Balls.....  
 18¢@20¢  
 Cotton Mops, 6, 9, 12 and 15 lb. to  
 doz.....7¢@3¢  
 Cotton Wrapping, 5 Balls to lb.....  
 9¢16¢  
 American 2-Ply Hemp, 1/4 and 1/2-lb.  
 Balls.....10¢12¢  
 American 3-Ply Hemp, 1-lb. Balls.....  
 10¢12¢

**India 2-Ply Hemp, 1/4 and 1/2-lb.**

Balls (Spring Twine).....9¢4¢  
 India 3-Ply Hemp, 1-lb. Balls.....9¢4¢  
 India 3-Ply Hemp, 1 1/2-lb. Balls.....8 1/4¢@9¢  
 2, 5, 1 and 5-Ply Jute, 1/2-lb. Balls.....7 1/4¢  
 Mason Line, Linen, 1/2-lb. Balls.....15¢  
 No. 26, Mattress, 1/4 and 1/2-lb. Balls.....35¢  
 Wool......6¢

**Vises—**

Solid Box.....50¢@.....\$  
 Bonney's Saw Vises.....40¢10¢

**Parallel—**

Athol Machine Co.:  
 Simpson's Adjustable.....40¢  
 Stand's d.....40¢  
 Amateur......25¢  
 Bonney's.....40¢10¢  
 Fisher & Norris Double Screw.....15¢10¢  
 Hollands.....40¢@40¢10¢  
 Lewis Tool Co.....20¢30¢  
 Massey's Perfect.....15¢20¢  
 Massey's Clincher.....30¢40¢  
 Merrill's......20¢  
 Miller's Falls.....low list 10¢  
 Parker's:  
 Victor.....20¢25¢  
 Regulars.....20¢25¢  
 Vulcan's.....40¢45¢  
 Combination Pipe.....20¢25¢  
 Prentiss......20¢25¢  
 Sargent's.....60¢@60¢10¢  
 Simpson's Adjustable.....49¢  
 Sneliker's X. L.....20¢25¢  
 Stephens.....20¢25¢  
 Toles' Woodworking.....25¢  
 Trenton.....40¢@40¢10¢

**Saw Filers—**

Bonney's No. 1, \$13; No. 3, \$6.50@10¢  
 Dia-Cut's D 3 Clamp and Guide, gr. doz.  
 \$30.....25¢  
 Heading.....40¢10¢  
 Wentworth's Rubber Jaw, Nos. 1, 2  
 and 3.....30¢7 1/2¢

**Miscellaneous—**

Signal & Keeler Combination Pipe

Vise.....60¢

Parker's Combination Pipe:

87 Series.....60¢  
 187 Series.....60¢5¢  
 No. 870.....40¢

**Wads—Price Per M.**

R. E., 11 up.....60¢  
 B. E., 9 and 10.....70¢  
 B. E., 8.....80¢  
 B. E., 7.....80¢  
 P. E., 11 up.....\$1.00  
 P. E., 9 and 10.....1.25  
 P. E., 8.....1.50  
 P. E., 7.....1.50  
 Ely's B. E., 11 and larger.....\$1.70@1.75  
 Ely's P. E., 12 to 20.....\$3.00@3.25

**Wagon Jacks—**

See Jacks, Wagon.

**Ware, Hollow—**

Aluminum—

S. S. & Co. Reduced List.....40¢

**Cast Iron, Hollow—****Store Hollow Ware:**

Ground.....60¢@60¢7 1/2¢  
 Unground.....65¢@65¢10¢

White Enamelled Ware:

Moslin Kettles 75¢10¢@75¢10¢5¢

Boilers and Saucepans.....65¢55¢5¢

Tinned Boilers and Saucepans.....55¢55¢5¢

See also Pots, Glue.

**Enamelled—**

Agst-Nick 1 Steel Ware, list July '99, 40¢  
 Granite Ware, list Jan. 1, '94, revised  
 Jan. 2, '95.....40¢10¢  
 Second Quality, Agate Nickel Steel.....55¢  
 Second Quality, Granite.....70¢10¢@70¢10¢10¢

**Iron Clad:**

Peppered Ware, high list.....70¢

P. Inces Ware, special list.....83¢4¢

Mottel Ware, high list.....75¢

Never Break Enamelled.....50¢5¢@50¢10¢

**Tea Kettles—**

Galvanized Tea Kettles:

Inch.....6 7 8 9

Each.....40¢ 45¢ 50¢ 60¢

**Steel Hollow Ware.**

Avery Spiders & Griddles.....65¢@65¢5¢

Avery Kettles.....60¢

Porcelain.....50¢5¢@50¢10¢

Never Break Spiders and Griddles.....

65¢@65¢5¢

Never Break Kettles.....60¢@60¢10¢

Solid Steel Spiders & Griddles.....70¢@70¢5¢

Solid Steel Kettles.....60¢

Solid Steel Ware, Enamelled.....50¢5¢

**Silver Plated Hollow—**

William Rogers Mfg

**Washers—****Leather, Axle—**

Solid.....80¢10¢10¢85¢  
 Patent.....85¢85¢5¢  
 Coil: 1/4 1 1/4 1/4 Inch.  
 12c 13c 14c 16c per 100

**Iron or Steel—**

Size bolt ... 5-16 3/4 1/2 3/4 1/2  
 Washers.....\$6.20 5.30 4.00 3.50 3.00  
 In lots less than one keg add 1/4c per  
 lb., 6-lb. boxes add 1/4c to list.  
 Note—Jobbers' prices generally lower  
 than manufacturers'.

**Washer Cutters—**

See Cutters, Washer.

**Washing Machines—**

See Machines, Washing.

**Water Coolers—**

See Coolers, Water.

**Weaners—**

Tyler's New Hatter—No. 1 7 doz. \$3.45;  
 No. 2, \$3.70; No. 3, \$4.00; No. 4, \$1.30  
 Tyler's Safety—Nos. 1 and 2, 7 doz. \$1.70;  
 No. 3, \$2.00; No. 4, \$2.30.

**Wedges—**

Oil Finish.....lb. 4¢4¢4¢

Aze Finish.....lb. 4¢4¢4¢

**Weights, Sash—**

Carloads at factory.....\$30.00@...  
 Less than carloads at factory.....  
 \$22.00@...

NOTE.—There is a wide difference in  
 prices East and West, and some coun-  
 ties are naming higher prices than the  
 above.

**Well Buckets, Galvanized**

See Pails, Galvanized.

**Wheels Well—**

8-in., \$1.75@2.00; 10-in., \$2.35@2.60;  
 12-in., \$3.75@3.35; 14-in., \$4.00@4.50

**Wire and Wire Goods—**

Market: Nos. 6 to 16:  
 Br. & Ann.....70¢5¢72 1/2¢  
 Cop'd.....65¢5¢67 1/2¢  
 Galv.....65¢5¢67 1/2¢  
 Tin'd, Tin'd list.....75¢5¢77 1/2¢  
 Stone, Br. and Ann'd:  
 Nos. 19 to 26.....77 1/2¢@77 1/2¢  
 Nos. 27 to 36.....77 1/2¢@77 1/2¢  
 Annealed Wire on Spools.....  
 80¢10¢80¢10¢80¢10¢  
 Brass, list Feb. 26, '98.....15¢

Copper, list Feb. 26, '98.....15¢  
 Cast Steel Wire.....50¢  
 Stubs' Steel Wire.....\$5.00 to \$2, 40¢  
 Wire Clothes Line, see Lines.  
 Wire Picture Cord, see Cord.

**Bright Wire Goods—**

Iron and Brass, list July 1, 1899.....  
 80¢10¢30¢10¢10¢

**Wire Cloth and Netting—**

Galvanized Wire Netting.....75¢10¢5¢30¢  
 Painted Screen Cloth per 100 ft.....  
 \$1.40@...

**Wire Barb—See Trade Report.****Wire, Rope—See Rope, Wire.****Wrenches—**

Agricultural.....75¢  
 Baxter's S.....70¢  
 Coes' Genuine.....33 1/2¢10¢5¢3¢  
 Coes' Mechanics.....33 1/2¢10¢5¢3¢  
 Acme.....60¢10¢  
 Alken's Pocket (Bright).....\$2.00@3.20  
 Alligator.....80¢10¢30¢

**Bemis & Call's:**

Adjustable S.....35¢5¢  
 Adjustable 3 Pipe.....40¢  
 Briggs' Pattern.....30¢10¢  
 Combination Black.....40¢10¢  
 Combination Bright.....40¢5¢  
 Cylinder or Gas Pipe.....55¢  
 Extra Heavy.....45¢  
 Merrick's Pattern.....50¢  
 No. 3 Pipe, Bright.....55¢  
 Bradley Automatic.....30¢  
 Boardman's.....33 1/2¢  
 Bull Dog, W. & B.....80¢10¢10¢  
 Donohue's Engineer.....40¢10¢  
 Eagle.....50¢10¢  
 Hercules.....70¢  
 Solid Handles, P. S. & W.....50¢  
 Stevenson.....60¢10¢10¢  
 Stillson's.....55¢

**Wrought Goods—**

Staples, Hooks, &c., list March 17  
 '92.....80¢30¢85¢

**Yokes, Neck—**

Covered Saddlery Works, Trimme 1.60¢5¢  
 Covered Saddlery Works, Neck Yoke  
 Centers.....70¢

**Yokes, Ox, and Ox Bows—**

Fort Madison's Farmers & Freighters'..  
 list net

**Zinc—**

Sheet.....lb 7 3/4¢@30¢

**PAINTS, OILS AND COLORS.—Wholesale Prices.****White Lead, Zinc, &c.**

Lead, Foreign white, in Oil.....7 1/2¢@ 9 1/2¢  
 Lead, American White, in Oil:  
 Lots of 500 lb or over.....@ 6 1/2¢  
 Lots less than 500 lb.....@ 6 1/2¢  
 Lead, White, in oil, 25 lb tin  
 pails, add to keg price.....@ 1 1/2¢  
 Lead, White, in oil, 12 1/2 lb tin  
 pails, add to keg price.....@ 1 1/2¢  
 Lead, White, in oil, 1 to 5 lb as-  
 sorted tins, add to keg price.....@ 1 1/2¢  
 Lead White, Dry in bbls.....@ 1 1/2¢  
 Lead, American, Terms: On lots of 500  
 lbs. and over, 60 days, or 2% for cash if  
 paid in 15 days from date of invoice.  
 Zinc, American, dry.....@ 4 1/2¢@ 5¢  
 Zinc, Paris, Red Seal.....@ 9 1/2¢  
 Zinc, Paris, Green Seal.....@ 9 1/2¢  
 Zinc, Antwerp Red Seal.....@ 9 1/2¢  
 Zinc, Antwerp, Green Seal.....@ 9 1/2¢  
 Zinc, V. M. in Poppy Oil, G. Seal  
 lots of 1 ton and over.....11 1/2¢@  
 lots less than 1 ton.....@ 12 1/2¢  
 Zinc, V. M. in Poppy Oil, Red Seal,  
 lots of 1 ton and over.....@ 10 1/2¢  
 lots less than 1 ton.....@ 11 1/2¢  
 DISCOUNTS.—V. M. French Zinc.—Dis-  
 counts to buyers of 10 bbl. lots of one or  
 assorted grades, 1%: 25 bbls., 2%: 50 bbls.,  
 4%. No discount allowed on less than 10  
 bbl. lots.

**Dry Colors.**

Black, Carbon.....@ 6¢@10¢  
 Black, Drop, Amer.....@ 3¢@5¢  
 Black, Drop, Eng.....@ 5¢@10¢  
 Black, Ivory.....@ 9¢@20¢  
 Blue, Celestial.....@ 5 1/2¢@ 8¢  
 Blue, Chinese.....@ 33¢@40¢  
 Blue, Prussian.....@ 30¢@35¢  
 Blue, Ultramarine.....@ 7¢@35¢  
 Brown, Spanish.....@ 4¢@1¢  
 Brown, Vandyke, Amer.....@ 13¢@2 1/2¢  
 Brown, Vandyke, Foreign.....@ 2 1/2¢@ 5 1/2¢  
 Carmine, No. 40.....@ \$2.15@2.75

Green, Chrome, ordinary.....5¢@ 6¢  
 Green, Chrome, pure.....@ 25¢  
 Lead, Red, bbls. and 1/2 bbls.....@ 6¢  
 Lead, Red, kegs.....@ 6 1/2¢  
 Litharge, bbls. and 1/2 bbls.....@ 6¢  
 Litharge, kegs.....@ 6 1/2¢  
 Ocher, French Washed.....14¢@ 2 1/2¢  
 Ocher, German Washed.....4 1/2¢@ 5¢  
 Ocher, American.....\$ ton \$10.00@15.00  
 Orange Mineral, English.....\$ lb 9¢@10 1/4¢  
 Orange Mineral, French.....11 1/4¢@13 1/4¢  
 Orange Mineral, German.....9 1/4¢@12¢  
 Orange Mineral, American.....7 1/4¢@ 8¢  
 Red, Indian, English.....4 1/4¢@ 8 1/4¢  
 Red, Indian, American.....3¢@ 3 1/4¢  
 Red, Turkey, English.....7 1/2¢@10¢  
 Red, Tuscan, English.....7¢@10¢  
 Red, Venetian, Amer.....\$ 100 lb 80¢@1.10  
 Red, Venetian, English.....13¢@ 3¢  
 Sienna, Italian, Burnt and  
 Powdered.....\$ lb 2 1/2¢@ 3¢  
 Sienna, Ital., Raw, Powd.....2 1/2¢@ 3¢  
 Sienna, American, Raw.....14¢@ 14¢  
 Sienna, American, Burnt and  
 Powdered.....\$ lb 14¢@ 14¢  
 Talc, French.....\$ 100 lb \$1.25@1.50  
 Talc, American......90¢@1.10  
 Terra Alba, French, \$ 100 lb......80¢@1.00  
 Terra Alba, English......85¢@1.00  
 Terra Alba, American No. 1......25¢@.70  
 Terra Alba, American No. 2......45¢@.50  
 Umber, Turkey, Bnt. & Powd.....24¢@ 34¢  
 Umber, Turkey, Raw & Powd.....24¢@ 34¢  
 Umber, Bnt. Amer.....14¢@ 14¢  
 Umber, Raw, Amer.....14¢@ 14¢  
 Yellow, Chrome.....10¢@25¢  
 Vermilion, American Lead.....10¢@20¢  
 Vermilion, Quicksilver, bbls  
 or kegs.....@ 60¢  
 Vermilion, Quicksilver, bags.....@ 68¢  
 Vermilion, Quicksilver, sm'r pkgs.....@ 70¢  
 Vermilion, English, Import......60¢@70¢  
 Vermilion, Chinese......80¢@90¢

**Colors in Oil.**

Black' Lampblack.....10¢@14¢  
 Blue, Chinese.....35¢@40¢

Blue, Prussian.....33¢@36¢  
 Blue, Ultramarine.....12¢@16¢  
 Brown, Vandyke.....10¢@13¢  
 Green, Chrome.....8¢@14¢  
 Green, Paris.....10¢@13¢  
 Sienna, Raw.....10¢@13¢  
 Sienna, Burnt.....10¢@13¢  
 Umber, Raw.....9¢@12¢  
 Umber, Burnt.....9¢@12¢

**Miscellaneous.**

Barytes, Foreign, \$ ton.....\$18.00@20.00  
 Barytes, Amer. floated.....19.00@20.00  
 Barytes, Crude.....8.00@10.00  
 Chalk, in bulk.....\$ ton 2.15¢@2.25¢  
 Chalk, in bbls.....\$ 100 lb 35¢  
 China Clay, English.....\$ ton 11.00@17.00  
 Cobalt, Oxide.....\$ 100 lb 2.00¢@2.10¢  
 Whiting, Common, \$ 100 lb.....42 1/2¢@.51¢  
 Whiting, Gliders......47¢@.56¢  
 Whiting, extra Gliders......57¢@.64¢

**Putty.**

In barrels and 1/4 bbls.....@1 7-10  
 In tin cans, 1 to 5 lb.....@ 3 1/4¢  
 In bladders.....@2.20

**Spirits Turpentine.**

In Southern bbls.....@ 51¢  
 In machine bbls.....@ 51 1/2¢

**Glue.**

Low Grade.....\$ lb 13¢@15¢  
 Cabinet.....13¢@16¢  
 Medium White.....14¢@16¢  
 Extra White.....16¢@25¢  
 French.....12¢@13¢  
 Irish.....13¢@15¢

**Animal, Fish and Vegetable Oils.**

Linseed, City, raw.....\$ gal. 45¢@49¢  
 Linseed, City, boiled......51¢@51¢  
 Linseed, State and West'n, raw 45¢@47¢

Linseed, raw Calcutta seed.....@25¢  
 Lard, Prime......44¢@44¢  
 Lard, Extra No. 1......38¢@39¢  
 Lard, No. 1......31¢@36¢  
 Cotton-seed, Crude......27 1/2¢@28¢  
 Cotton-seed, Summer Yellow,  
 prime......32 1/4¢@33¢  
 Cotton-seed, Summer Yellow,  
 off grades......31 1/4¢@  
 Sperm, Crude......31¢@  
 Sperm, Natural Spring......31¢@  
 Sperm, Bleached Spring......31¢@  
 Sperm, Natural Winter......53¢@54¢  
 Sperm, Bleached Winter......59¢@59¢  
 Whale, Crude......31¢@  
 Whale, Natural Winter......43¢@  
 Whale, Bleached Winter......45¢@  
 Whale, Extra Bleached Win......48¢@  
 Menhaden, Crude, Sound......26¢@27¢  
 Menhaden, Light Pressed......28¢@29¢  
 Menhaden, Bleached Winter......32¢@33¢  
 Menhaden, Extra Bleached......34¢@35¢  
 Tallow, prime......49¢@51¢  
 Cocanaut, Ceylon......6 1/2¢@ 6 1/2¢  
 Cocanaut, Cochiti......8¢@ 8 1/4¢  
 Cod, Domestic......34¢@36¢  
 Cod, Newfoundland......34¢@40¢  
 Red Saine......32¢@34¢  
 Red Saponified.....\$ lb 4 1/2¢@ 4 1/2¢  
 Straits......3¢@  
 Olive, Italian, bbls......56¢@59¢  
 Neatsfoot, prime......48¢@50¢  
 Palm, prime, Lagos.....\$ lb 5 1/4¢@ 5 1/4¢

**Mineral Oils.**

Black, 20 gravity, 25@30 cold  
 test.....\$ gal. 10 1/4¢@11¢  
 Black, 29 gravity, 15 cold test.....11 1/4¢@12¢  
 Black, summer.....10¢@10 1/4¢  
 Cylinder, light filtered.....14 1/4¢@17¢  
 Cylinder, dark filtered.....12 1/2¢@17 1/4¢  
 Paraffine, 903-907 gravity.....11¢@12 1/2¢  
 Paraffine, 903 gravity.....11¢@11 1/2¢  
 Paraffine, 883 gravity.....9 1/4¢@10¢  
 Paraffine, red, No. 1.....12¢@12 1/2¢  
 In small lots 1/4¢ advance.

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